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ADDRESSES AND ORIGINAL ARTICLES

ON COMPLICATIONS OF THE SPECIFIC FEVERS

WITH ESPECIAL REFERENCE TO SCARLET FEVER AND MEASLES*

BY CHARLES R. BOX, M.D., F.R.C.P. LOND., F.R.C.S. ENG.

SENIOR PHYSICIAN TO THE LONDON FEVER HOSPITAL, AND TO THE FREEMASONS' HOSPITAL; CONSULTING PHYSICIAN TO ST. THOMAS'S HOSPITAL

III.—DEALING CHIEFLY WITH SURGICAL AND PYOGENIC LESIONS

WHATEVER view may be held as to the relationship between various species of streptococci, few clinicians would now dissent from the belief that wound scarlet fever, scarlet fever following burns and scalds, puerperal scarlet fever and ordinary scarlet fever, are all manifestations of the same infection, the only difference being in the portal of entry. The commonest variety of wound scarlet fever seen nowadays is that which follows operations on the nose and throat. Sometimes, in such cases, there is a history of exposure to infection, but more often not. A plausible explanation in the latter event is that the patients were carriers of the scarlatinal streptococcus at the time of operation. The slight infectivity of some of these surgical types is to be accounted for by the fact that the faucial inflammation is insignificant, and from force of circumstances the patient is so situated that he cannot move about and infect others. In the nose and throat cases there is a very real danger of spread of infection. Cases of burn scarlet fever have often been nursed in general surgical wards with impunity; on the other hand, as pointed out long ago by J. F. Goodhart and confirmed by C. B. Ker and others, patients admitted to the wards of a fever hospital with scarlatiniform rashes following surgical lesions rarely contract the disease, and subsequent desquamation as a rule is quite characteristic. This also has been our experience at the London Fever Hospital.

Cases of surgical scarlet fever may occur in all degrees of severity. I have seen mild attacks of puerperal scarlet fever that gave rise to no anxiety, although this form is justly dreaded. In two such cases the new-born infants took the disease and also recovered, but infection of the infant is exceptional, and it is generally believed that the mother, if not too ill, may suckle the child with impunity. When following operations on the nose and throat, moreover, the disease may show no undue severity, but sometimes assumes a septic form with much sloughing and tissue destruction. Recent operation wounds in other parts of the body may break down in consequence of scarlatinal infection, but do not always do so. I remember one instance in which scarlet fever followed an operation for undescended testicle and the testicle sloughed.

A special and instructive type of scarlet fever is that in which the infection has occurred from a trivial lesion on a finger. Ker records the case of a house surgeon at the Edinburgh Royal Infirmary who developed scarlet fever after pricking his finger while opening a suppurating gland in the out-patient room. Three days later injected lymphatics were evident, and a scarlet punctate rash covered the affected arm and was spreading over the chest. The patient on whom he had operated desquamated later in typical fashion and doubtless had scarlet fever. Ker admits a doubt as to the route of infection in the house surgeon, who might conceivably have contracted the fever in the ordinary way. But such cases as this are not extraordinarily rare; I am sure I have seen some half-dozen and have one under my own care at the present time. They are recognised by the presence of an ascending lymphangitis of the arm and swollen tender axillary glands. An outbreak of a general scarlatiniform rash follows, together with some degree of sore-throat. Sometimes, even before the generalised rash has developed, minute punctation may be seen along the track of the inflamed lymphatic striæ. The part played by the local lesion, usually on a finger, is often overlooked. Whenever lymphangitis is found in a patient suffering from scarlet fever, the possibility of this type of infection should be investigated.

Some years ago a valued superintendent medical officer at the London Fever Hospital, when dressing a suppurating gland in the neck of a scarlet fever patient, infected a small abrasion on his finger. The axillary glands rapidly swelled up with high fever and increasingly rapid pulse-rate. A hæmolytic streptococcus was grown from the blood, and in a few days he was dead from a streptococcal septicæmia. In this case no scarlatinal rash was seen, but there was no doubt as to the source of infection.

It is instructive to study the type of glandular reaction in cases of this kind. When we see the acutely tender swollen glands of scarlet fever, which we know may go on to suppuration, we are apt to picture to ourselves a gland packed with polynuclear cells and active streptococcal phagocytosis. But this is not the picture revealed by the microscope (Fig. 1). The most striking change is swelling of the endothelial cells lining the blood sinuses. These cells undergo rapid proliferation and are shed. Mitosis may be evident. There is also effusion of serum into the gland tissue, and the germinal centres of the lymph follicles enlarge. The early picture is one of reticulo-endothelial hyperplasia under the influence of the toxin; it is only in the later stages that polynuclear infiltration and abscess formation ensue. It seems legitimate to consider the early glandular reaction as an example of the same type of endothelial reaction as that already described in the glomeruli of the scarlatinal kidney.

It is interesting to note that the Dicks of Chicago appear to have been dealing with a case of scarlet fever of this type when they succeeded in isolating and in proving the infectivity of the scarlatinal streptococcus. The details, which have hardly been commented upon by those who have written about the experiment, were as follows: The patient in question was a nurse who was attending an ordinary case of scarlet fever. For two days before the onset of her own attack she had a sore finger. The pus from which the Dick cultures were obtained was taken from the finger on the second day of her scarlatinal attack. It is now a matter of history that it was by swabbing throats with these unfiltered cultures that the Dicks produced two cases of typical scarlet fever in volunteers, whilst the filtered culture proved innocuous.

A very interesting account is given by Dr. D. V. Nikitin, of Moscow, of his experiences with Gabritschevski's vaccine as a scarlatinal prophylactic. This appears to be a vaccine of killed scarlatinal streptococci in the broth in which they were grown.

* The Lumleian lectures for 1933, delivered before the Royal College of Physicians of London on March 16th, 21st, and 23rd. Lectures I. and II. appeared in our issues of June 10th and 17th.

At the point of injection Nikitin noted an elliptical area of redness, with an ascending lymphangitis and swelling of the regional lymphatic glands. He noted also that the hyperæmic local lesion and the lymphatics presented a punctation like the scarlet fever rash, which is precisely the appearance I had seen in some of the cases of lymphangitis which came under my own observation. Large doses of the vaccine not only produced the local lesion but were also followed by fever; delirium; a generalised rash, which was accentuated in the groins, axillæ, and on the neck; nausea and vomiting; a red throat; a papillated tongue and transitory albuminuria. Desquamation followed. In a couple of cases acute polyarthritis occurred in the second week, and in one case acute nephritis also in the second week. Nikitin satisfied himself that immunity could be produced by this vaccine, but two or three injections were necessary.

The path of infection when an infected finger is the focus is obvious. The extension is by way of the lymphatics, and the general symptoms ensue when the toxin gains access to the blood stream. I think we may assume that the same sequence of events occurs when the fauces are the portal of entry—i.e., a lymphatic invasion followed by a general toxæmia.

Scarlatinal Septicæmia and Pyæmia

It is generally thought that, as in the case of diphtheria, the local defences are sufficient to prevent entry of the infecting organism of scarlet fever into the blood stream, and the general symptoms are toxæmic and not septicæmic in nature. This harmonises with the acknowledged fact that in most cases streptococci cannot be cultivated from the blood, nor has inoculation of volunteers with fresh blood-serum and with fresh whole blood taken from early cases been found to reproduce the disease. We must not, however, from these facts deduce a hard-and-fast rule for all types of scarlet fever.

In cases of septic scarlet fever—i.e., in those cases in which the faucial lesion is pronounced and in which extensive inflammation of the nasopharynx is present with, it may be, infection of the accessory air sinuses and ears, together with swollen cervical glands—reports of successful culture of hæmolytic streptococci from the blood are increasingly frequent. It was from the blood in cases of this type that early investigators succeeded on some occasions in growing streptococci, but they looked upon them as secondary invaders. The forms of the temperature charts in many septic attacks suggest waves of infection, the appearance of distant complications being accompanied by fresh bouts of fever, and in these cases also streptococci, usually of the hæmolytic type, have been grown from the blood during the pyrexia. It is noteworthy that it is in preventing these protracted and recurrent infections that antiscarlatinal serum appears to be ineffective. Attempts, too, to treat them with repeated large doses of antitoxin by the intramuscular and the intravenous routes have not led to very convincing results. Occasionally there has been an abatement of the fever soon after the antitoxin was administered, but often the fall is delayed and meantime local abscesses have formed in various situations. Knowing, as we do from experience before antitoxin was available, the potentialities for recovery in cases of septic scarlet fever, I am not inclined to attach very much weight to the few recorded recoveries from septic complications which are attributed to the late use of antitoxin. The serum is mainly antitoxic, the antibacterial element is not at all strong and is said to be very tardy in its development in the inoculated horse. Moreover, patients with late complications of the septic type are more often Dick-negative than Dick-positive, and therefore presumably well supplied with antitoxin. It is in the true toxic cases that the serum is most effective in alleviating symptoms.

In a comparatively recent communication, Gordon of Detroit claims that in the septic cases immuno-transfusion, in the sense of the transfusion of the unaltered blood of a suitable donor recently convalescent from scarlet fever, in quantities of 100–500 c.cm. (the latter for an adult) repeated once or twice if necessary, gives favourable and sometimes very striking results.

It is well known that a miniature non-infectious scarlet fever can be produced by overdosage with scarlatinal toxin during the process of immunisation, the symptoms being fever, malaise and vomiting, possibly with sore-throat, reddened tongue, a scarlatinal rash and slight albuminuria or, rarely, transient hæmaturia and even desquamation. But such septic complications as otitis, suppurative adenitis, and distant suppurations do not occur. It has struck many clinicians that in these septic cases we are dealing with something more than a mere toxæmia; rather do they appear to be of a septicæmic or even pyæmic type. It is quite possible that the time-honoured clinical subdivision of scarlet fever into the toxic and the septic varieties may be found to depend on the non-access or the access of the hæmolytic bacilli to the blood stream, in the one case a simple toxæmia being present and in the other a septicæmia or pyæmia. Hitherto a superadded secondary infection has been held to be responsible for the septic type. It is true that we do not often see a fulminating pyæmia as the result of scarlet fever, but we do often meet with isolated pyæmic manifestations in the septic type of the disease, and it is significant that a hæmolytic streptococcus is usually recovered from the suppurative foci.

Of course it is well known that septicæmia and pyæmia may occur in scarlet fever as sequels of suppurative otitis and infection of the lateral sinus, but there is another type of almost latent pyæmia which occurs without any evidence of preceding otitic infection, and of which little or no mention is made, yet I suspect that it is not a very great rarity. This form is characterised by the development of one or more large abscesses in the connective tissue planes of the body. The abscesses are comparatively painless in their evolution but their formation is generally accompanied by sharp febrile disturbance. They do not arise in lymphatic glands and are distinct from the suppurative cervical adenitis with which all fever hospital officers are familiar. This suppurative adenitis with its accompanying periadenitis is obtrusive and may, as is well known, lead to extensive inflammatory infiltration of the connective tissue planes of the neck, an infiltration which may lead to discoloration and widespread purulent softening, with sloughing of the inflamed tissues and sometimes erosion of the cervical veins but rarely of the arteries. But the abscesses to which I want to draw attention are more distant and less obvious than this. They may be situate on the limbs or on the trunk and their presence for a time be quite unsuspected.

Nearly 20 years ago I was asked to go into the country to see a lad who a week or two before had had what appeared to be an ordinary attack of scarlet fever, but who had now developed a secondary fever of considerable intensity and persistence for which no reason was evident. The boy complained of no pain, his sore-throat had cleared up, and the cervical glands were not enlarged or tender. The

tympanic membranes were quite healthy. The heart was normal and the lungs were free from inflammation. The abdomen presented no signs of disease and there was no complaint of joint pain or evidence of joint swelling. Neither were there any signs of nephritis. I was just as puzzled to account for his condition as was his own doctor. Finally we rolled him over in bed and stripped the bedclothes for a final inspection, when it became evident that one buttock was rather more prominent than the other. Further examination revealed deep-seated fluctuation. An abscess was evacuated from beneath the gluteus maximus, quite unconnected with the hip-joint, and a speedy and uneventful recovery took place.

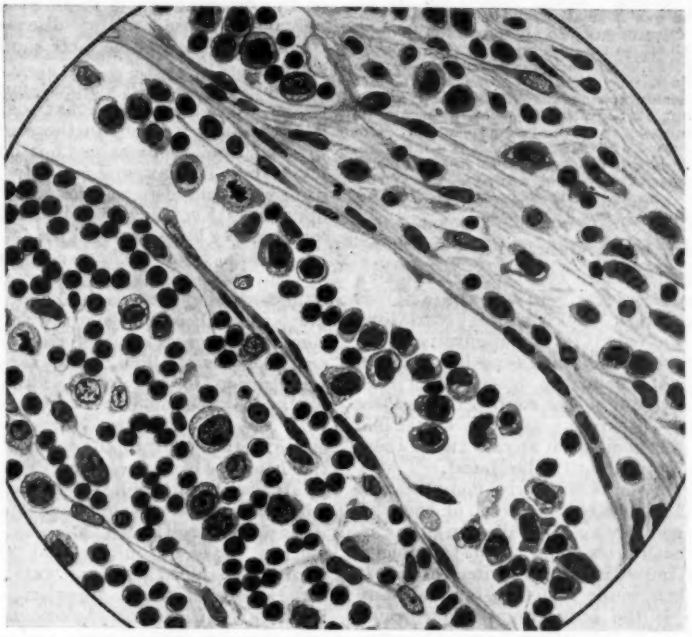

FIG. 1.—Endothelial proliferation and mitosis in lymph gland. Streptococcal septicæmia contracted from a patient with scarlatinal suppuration.

Occasionally, also, during the course of the fever, an empyema develops insidiously, not preceded by any obvious lung lesion. This is not at all common, and some authors do not even mention the possibility. Osler speaks of it as an insidious and serious complication. Should it occur as part of a lateral sinus pyæmia, naturally the outlook is most gloomy, but it may occur quite apart from this complication and then recovery is possible. Of the last three empyemata which I have seen in scarlet fever all recovered. The following is a striking and recent example of scarlatinal pyæmia and affords confirmatory evidence that the septic or pyæmic form of the disease is actually due to infection of the blood stream by the streptococcus of scarlet fever.

A young man of 21 developed an illness, characterised by shivering, fever, and general aching of the body on Dec. 28th, 1932 (Fig. 2). His throat was sore and he was thought to have an attack of influenza. It was not until seven days later that a scarlatinal rash appeared and I was asked to see him. A typical punctate erythema was present on the trunk and extremities, so he was removed to hospital. There had been no vomiting but the tongue was papillated and peeling. The throat was inflamed and some nasal discharge was present. The Schultz-Charlton test was positive, and petechiæ were produced at the bend of the elbow by application of a tight bandage to the upper arm. The same evening 20 c.cm. of scarlet fever antitoxin were given intramuscularly and a throat swab was taken but proved negative for diphtheria bacilli. After the antitoxin the temperature fell from 103° F. to 98·4° F. rather abruptly, but the pulse-rate continued a little over 100. There was a cloud of albumin in the urine. On the third day of the rash the temperature began to rise again. The right eyelids became swollen and discoloured; proptosis with almost absolute abolition of movement followed in a day or two. There was much chemosis. Sight was said to be dim, but beyond slight fullness of the retinal veins nothing gross was obvious on ophthalmoscopic examination. The ear-drums were healthy and a radiogram of the air sinuses of the skull showed nothing abnormal. Orbital cellulitis or sinus thrombosis was feared.

In three days improvement began; the eye gradually returned to a normal condition and the fever subsided. On the ninth day the temperature shot up again, and a cellulitis of the left leg in its lower third and around the ankle-joint appeared; this rapidly suppurated and was incised, first on the outer and a few days later on the inner side of the leg. The pus was superficial and contained a hæmolytic streptococcus. With the incision the temperature fell again. Next, a subcutaneous abscess appeared on the inner side of the left arm and was duly opened; again the hæmolytic streptococcus was present. Another burst of fever accompanied the appearance of a similar but larger abscess in the subcutaneous tissue of the right upper arm. This was aspirated but needed incision next day; again the hæmolytic streptococcus was present. The same evening a large abscess in the left scapular region was found, although there had been no complaint of any special pain in this region. This, too, was evacuated and contained the same organisms as the others. It was now the twenty-ninth day of disease, counting from the rash, or thirty-sixth from the onset, and the patient was Dick-negative. The temperature was now normal, and for a week the urine had been free from albumin.

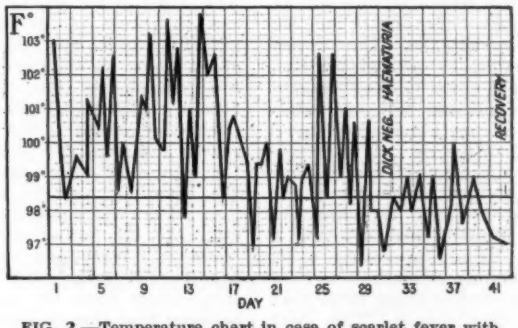

FIG. 2.—Temperature chart in case of scarlet fever with pyæmia.

Three days later bloody urine was passed, containing no casts but many streptococci and some pus cells; the right kidney was tender. In little over a week the urine was normal again. With difficulty a streptococcus was grown from the urine but this time it showed no hæmolytic power. Little or no fever accompanied the hæmaturia, but the left ankle-joint now appeared to be swollen and a radiogram suggested slight changes in the joint cartilage. Shortly afterwards there was evident effusion in the left knee-joint. After a few days this was aspirated; a thin puriform fluid was withdrawn which on culture yielded a hæmolytic streptococcus, associated with a streptococcus of the viridans type. The temperature, however, remained normal and a second aspiration of the knee-joint, the swelling of which was slowly subsiding, yielded a thin puriform fluid from

which no organisms could be grown. He is now convalescent after nearly three months' illness. The left ankle is stiff.

The urine in this case did not resemble that of a hæmorrhagic nephritis. There were no tube casts, but pus cells and streptococci were abundant. The right kidney alone was tender and the condition rapidly cleared up. In all probability the lesion was a small suppurating infarction.

The streptococcus from one of the abscesses was investigated by Prof. C. C. Okell, to whose kindness I am indebted for the following report: "There is no reason to suppose that this strain should not be equally good as a pyogenic and a scarlatinogenic strain. Its sugar reactions are pyogenic by Holman's test, but it agglutinates with a serum of Griffiths' prepared against a scarlatinal streptococcus. The scarlatinal serological type which it represents is a rare one. I shall be glad to hear how it behaves as an in-vitro toxin producer." The latter point was investigated for me by Dr. G. A. H. Buttle, who found that it did produce an erythrogenic toxin which was not very strong.

Scarlatinal Arthritis

As is well known, there are two types of affection of the joints in scarlet fever. In one the arthritis assumes the form which is known as scarlatinal rheumatism; in the other it is suppurative. To these we may perhaps add a third type in which an attack, apparently of rheumatic fever, supervenes whilst scarlet fever is running its course, but is later in onset than what is known as true scarlatinal rheumatism. The relationship, if any, between these forms has not been satisfactorily elucidated.

Scarlatinal rheumatism is an early manifestation which usually declares itself at the end of the first or early in the second week of the disease—that is, on the sixth or seventh days or on the days immediately preceding or immediately following these. It may appear even before the rash has faded. More often than not, it is the only complication which occurs; when other complications are associated they are of the septic type such as adenitis, rhinitis, or otitis, but the rheumatism does not appear to be dependent on these manifestations. Occasionally it has been known to follow a secondary tonsillitis during the convalescent period. Quite young children escape rheumatism and its frequency increases as age advances. It is more common in females than in males, and its percentage incidence is something between 3·5 and 4·5 per cent. The usual localisation is in the small joints rather than in the large, especially the joints of the fingers and the wrists, but the elbows, shoulders, knees, and sometimes the ankles and the hips may be involved in severe attacks. The affected joints are but slightly swollen or not at all and, although painful, tenderness is not a marked feature. The joints may feel somewhat hot but are rarely reddened. With the pain is associated a feeling of stiffness and sometimes of weakness. If the rheumatism occurs during the initial fever it may prolong the pyrexial period, but if the initial fever has subsided a sharp reaccession may signalise the joint involvement, falling quickly but recurring if fresh joints are attacked. The temperature chart is often spiked, showing evening exacerbations and morning remissions. In the mildest cases there may be no appreciable febrile disturbance. The joint affection is usually transient and, as in true rheumatism, the inflammation may show a tendency to flit from joint to joint and to return. The creamy tongue and profuse sweats of rheumatic fever are wanting. Muscular rheumatism affecting the trunk and limbs may in some cases occur at the same time as the arthritis. Recovery without any obvious damage to the joints is the rule and very few of these patients show valvular lesions while under observation, the incidence of endocarditis, according to most authors, being under 3 per cent. Dr. F. J. Poynton, however, traced the after-histories of 25 children who had suffered from rheumatism directly associated with scarlet fever. He found that they were liable to relapses in which arthritis or chorea or endocarditis might light up again, either alone or in combination. Sixteen of the 25 had organic valvular disease, mitral disease being the most common lesion. These facts should render prognosis cautious.

I quite agree with the statements made by F. F. Caiger, Ker, and others that scarlatinal rheumatism is more likely to occur in those who have previously suffered from rheumatism, not necessarily rheumatic fever, but it may undoubtedly appear in patients from whom no history of previous rheumatism can be obtained. Ker suggests that the antecedent rheumatism may have rendered the joints more susceptible to attack. Some writers consider scarlatinal rheumatism akin in its pathology to rheumatic fever. Others attribute it to a mild septic infection, presumably adventitious. Caiger writes that it is more common in cases characterised by an intense rash and copious peeling, and says that subsequent suppuration of the joints, although rare, is more likely to supervene in attacks of the septic type with severely ulcerated throats. This tallies with our experience at the London Fever Hospital that the incidence of rheumatism is less in cases adequately treated with antitoxin which would bring it into line with the rash as a toxic phenomenon.

McClure investigated 30 cases of scarlatinal rheumatism by blood culture and by aspiration of the joints. All blood cultures were sterile and in only three cases was an organism cultured from the joint fluid, in one *Staphylococcus albus* and in two late cases a large coccus. These organisms were considered to be contaminations. Nikitin twice saw polyarthritis occur after the use of Gabritcheveski's vaccine. This also indicates a toxic origin. But if we do account for the rheumatism as purely toxic, how are we to explain the occasional supervention of endocarditis?

The suppurative or pyæmic form of arthritis stands in marked contrast to scarlatinal rheumatism, both in its time of onset and its localisation. The onset is decidedly later than that of the rheumatism. The larger joints, such as the knee, ankle, and elbow, are attacked in preference to the small. The arthritis does not show the same tendency to spontaneous subsidence. The affected joints swell, are painful and feel hot but are not excessively tender. Although both rigor and fever may accompany the arthritis, the temperature is not always raised and the patient may be Dick-negative when the complication ensues. The accompaniments of the arthritis may be of the septic type with a formation of abscesses elsewhere. Most writers attribute the suppurative arthritis to a secondary infection. Washburn recorded a fatal case in the London Fever Hospital 34 years ago, and recovered streptococci from the pus in a knee-joint. He, too, believed that this organism was something apart from the virus of scarlet fever, but I am inclined to believe that the arthritis may really be the direct result of the original streptococcal invasion. Opportunities for investigation have been rare with the mild scarlet fever of recent years, but in the case I have already mentioned a scarlatinal strain of hæmolytic streptococcus was cultivated from the slightly purulent fluid in the knee-joint; it was however accompanied by a streptococcus of the *viridans* type. H. J. Parish and C. C. Okell found that if rabbits were first protected with an adequate dose of antitoxin

and then injected intravenously with virulent Dochez streptococci, they did not die within a day or two as is usually the case. But septicæmia was not prevented, and they almost always developed subacute joint lesions and later died of cachexia.

Ear Infections in Scarlet Fever

Suppurative otitis is one of the most common complications of scarlet fever. It appears in an obtrusive form in some 12 per cent. of the patients, but its real frequency is in all probability greater than this figure indicates, as it is based on the appearance of such symptoms as pain, deafness, ear discharge, and mastoid tenderness. It is well known that otitis may be a latent condition, and that the tympanum and mastoid cells may contain pus in the absence of any of the symptoms which I have mentioned. The presence or absence of tension may account for the discrepancy. Otitic infection is generally believed to travel from the throat by means of the Eustachian tube, and this is held to account for the much greater frequency of this complication in septic cases and particularly in childhood where access of infection to the ears is easier. Evidence of otitis may appear in the initial stages of the scarlatinal attack but it is more common after the first week or two and may be postponed to a later period of convalescence; in the latter cases there may have been slight indications of ear trouble at an earlier period which have quieted down.

By some authorities scarlatinal otitis is looked upon as being of a peculiarly malignant character and very apt to induce severe secondary complications. It should always be treated with respect, and in dealing with it and its mastoid complications difficult questions arise. Experience has taught that premature interference is unwise. Early puncture of the tympanic membrane as a pain-relieving measure in cases of acute otitis comes into a different category. It is more often called for in adults than in children, for it is a fact that in children who are suffering from scarlet fever the first symptom of otitis is, more often than not, an unexpected free painless discharge of pus from the external auditory meatus. If warning pain is present it is usually transitory and insignificant. As a matter of practical experience, opportunities for paracentesis are not nearly so common as one would expect. Nor are the results in those cases where the drum has ruptured spontaneously appreciably worse than those in which an opportunity for paracentesis has occurred, although it is urged that in the latter event the otitis will clear up more quickly and infection of the mastoid will be prevented. There is very little evidence that paracentesis prevents infection of the mastoid cells. I believe that in nearly all, perhaps in all, cases this has occurred already, the otitis media being only part of a rapid infection of the whole of the mucous lining of the Eustachian tube, tympanum, and mastoid antrum. The operation may, however, by allowing better drainage, obviate the need for a later operation on the mastoid.

The decision when to operate on an inflamed mastoid in scarlet fever is not always an easy one. When only mastoid tenderness is present and the otitis is quite recent, I am sure precipitate operation should be avoided, particularly in childhood and in the early stages of the scarlatinal infection. Many cases in which some degree of mastoid tenderness develops prove transient and clear up in a few days, sometimes without any ear discharge. The accompanying pyrexia may be deceptive, for in scarlet fever of the septic type there may be considerable difficulty in determining to what extent the mastoid inflammation is responsible for the fever. When, however, mastoid tenderness persists and is accompanied by a smouldering pyrexia, operation will usually prove necessary, especially if there is also headache. When an œdematous swelling appears over the mastoid process and is not caused by an inflamed retro-auricular gland, surgical intervention is also called for. How much should be done in such cases is a matter of dispute. I have in the past seen patients recover quickly when the swelling was incised down to and through the periosteum, further interference being postponed. But this is not our present practice. I leave the decision to our aural surgeon, Mr. D. F. A. Neilson, who prefers to open the mastoid and evacuate the pus from the antrum and satellite cells, including those at the tip of the mastoid process and the posterior ones overlying the lateral sinus.

There is no need for me to urge the necessity of immediate operation when facial paralysis supervenes, or when evidence of an infection of the labyrinth is present; also, when infection of the lateral sinus is suspected or when rigidity of the neck, vomiting, the presence of Kernig's sign, and perhaps an extensor plantar response point to the onset of meningitis. The current teaching that such complications of suppurative otitis media as lateral sinus thrombosis and intracranial abscess are late complications and rarely seen in fever hospitals is no doubt true, but I have seen at least four cases in which a cerebellar abscess developed during the time that the patient was under detention, and have known perisinus suppuration and fulminant streptococcal meningitis occur within the same period, so the possibility should not be ignored. The following is an account of a very uncommon case where acute labyrinthitis supervened, although a mastoid operation had been performed.

A young man of 20 was admitted under my care on the second day of scarlet fever. The attack was only moderately severe and of the septic type. The temperature on admission was 102° F. Twenty c.cm. of scarlatinal antitoxin were injected intramuscularly. The next day the temperature fell to normal and the throat rapidly cleared. On the fourteenth day a left ear discharge appeared, and some days later slight left facial weakness was detected. Pressure on the mastoid was painful. Very little alteration took place but, there being no improvement, the mastoid was opened and an unusually extensive purulent infiltration of the mastoid cells was found, extending towards the dura mater and the lateral sinus on the one hand and into the base of the zygomatic process on the other. After the operation all went well for three weeks, although slight facial weakness persisted. Finally the patient was allowed to get up.

On the fifty-second day, without any warning, he became violently sick and complained of giddiness, with apparent rotation of external objects in a clockwise direction in the vertical plane. He was found to have a persistent horizontal nystagmus, accentuated on looking towards the sound ear, the rapid movement being in this direction with a slower drift to the left. He noticed particularly that vomiting was apt to recur when he lay on his left side. He was completely deaf in the left ear. The temperature remained normal. Naturally, signs of a cerebellar abscess were looked for but nothing specially significant was found. The optic discs were healthy, there was no ataxy of movements of the arms or legs, and reflexes were normal. Possibly there was slight muscular hypotonia in the left leg. In view of the complete deafness of the left ear a diagnosis of left-sided labyrinthitis was made. The mastoid area was re-explored and a small unopened pus-containing air-cell was found in Trautman's area; this was emptied. The bone in the neighbourhood of the semicircular canals was reddened and evidently inflamed. The labyrinth was opened but no pus escaped. The acute symptoms rapidly subsided and a slight elevation of temperature followed the operation for a day or two. The nystagmus gradually lessened but was still present in very slight degree but unaltered form four weeks later. Later it disappeared.

A deceptive form of mastoid suppuration is that in which the swelling shows itself in the neck below the mastoid process; it is apt to be mistaken for a suppurating gland. Another is that where the swelling is anterior, in the parotid region, instead of posterior. Caiger stated definitely that if the swelling is situate anterior to or below the auditory meatus it is always superficial and dependent upon a suppurating gland. This is a good general indication, but on two occasions I have seen a swelling limited to the parotid region in front of the meatus which subsequent events proved did not originate in a gland. In one case for a time the condition was mistaken for mumps, but the fever and constitutional disturbance were very severe. A mastoid operation was ultimately performed but too late to prevent a fatal septicæmia. In the other patient the inflammation was less acute and recovery ensued after the mastoid was opened. The track of infection to the parotid region in these cases is not very clear; possibly it is through infected zygomatic cells, or perhaps via the external meatus between cartilage and bone, or from an air-cell situated near the tip of the mastoid process in close relation to the parotid gland. Forward extension of mastoid inflammation may be accompanied by œdema of the eyelids on the affected side, but the œdema may also be the result of glandular inflammation.

As is the usual experience, we find that most of the ear discharges dry up before the patient leaves the hospital, but it is our custom to detain patients with discharging ears longer than others, and this sometimes means a residence of three months or even more. Some authorities consider there is very little risk of infection after eight weeks, but our idea is to obtain healing before leaving hospital if possible. It is uncommon for the otitis to leave any appreciable defect in hearing. If tonsillar enlargement persists and adenoids are present, operation on these may accelerate the clearing-up of an otitis, but should not be performed too soon. The fourth week of the fever is said to be soon enough; some would postpone it much longer. C. E. Matthews showed that, in comparison with those who had recurrent or persistent rhinitis, patients with otorrhœa were much less likely to give rise to return cases of scarlet fever.

The Adenitis of Scarlet Fever

It is not surprising that enlargement of the upper cervical glands should be found at the onset of scarlet fever if the inflammation of the throat is at all severe. But in addition to this, examination of the axillæ and groins will often reveal slight glandular enlargements in these situations and, in some epidemics, a rather widespread but very moderate enlargement of the glands in the lower part of the posterior triangles of the neck. Autopsies on fatal cases may show slight enlargement of the mesenteric glands. I have never found a palpable spleen in uncomplicated early scarlet fever, but it may become palpable in late cases of the septic type. The slight generalised glandular enlargement is not by any means peculiar to scarlet fever; it is met with also in other infectious diseases.

The upper cervical glandular enlargement at the onset of the fever I have already alluded to, also the occasional supervention of an extensive cellulitis of the neck with grave complications, due to wide extension in the connective tissue planes of the neck and even of the thorax. But the late adenitis which occurs in the second and third and sometimes in the fourth week of the illness is more difficult to explain. Without premonitory symptoms a sharp pyrexial disturbance occurs and a gland or glands, usually under the upper part of the sternomastoid muscle, become swollen and tender. In these cases the throat may be practically clean, but it is an old observation which I can myself confirm that hæmorrhagic nephritis may appear either with or immediately after the glandular swelling, but only in a minority of those affected. Sometimes albuminuria but not necessarily a frank nephritis precedes the appearance of the glandular swelling.

This type of adenitis is almost peculiar to scarlet fever. It may be confounded with glandular fever, but the history and blood counts should suffice to differentiate the condition. Suppuration may ensue in perhaps one-third of the cases. Why this complication should occur at the time when it does, why it should have an apparent connexion with nephritis, and why it should show a decided tendency to suppurate are matters of speculation. It seems allied to the septic complications. Some have thought that oral sepsis is a factor in its causation, but it can occur in children and adults with perfectly clean mouths. The considerations that I have advanced with regard to a streptococcal invasion, not limited to the fauces, in septic scarlet fever, probably have some bearing on this problem. When such a gland suppurates a hæmolytic streptococcus may be grown from the pus. The suggestion has been made that the gland is invaded by the scarlatinal organism and becomes a new toxin factory. Surgical interference with these glands at too early a stage may lead to severe reactions and spreading inflammation. The proper treatment is to wait for frank pus formation and if this does occur to evacuate the abscess with as little disturbance as possible. Under these circumstances rapid healing may be expected.

Carriers of Scarlet Fever

The carrier problem arises in scarlet fever as in other infectious diseases. Recognition of the fact that scarlatinal carriers exist affords an explanation of otherwise inexplicable events, such as persistently recurrent outbreaks in schools and institutions, sporadic cases with no known scarlatinal contact, and certain cases of cross-infection in hospitals. Sometimes, too, milk-borne epidemics appear to have been started by carriers. Unfortunately it is not possible by any simple means to say whether a hæmolytic streptococcus, isolated from the throat, is capable of producing scarlet fever. The possibility of exact classification of the hæmolytic group of streptococci by agglutination or other serological methods is a very vexed question. In the "System of Bacteriology" published by the Medical Research Council only a year ago we find the following statement:—

> "Less than ten years ago it was claimed that the majority of scarlatinal strains of streptococci belonged to a well-defined serological group, but it is now believed that, owing to the multiplicity of types associated with scarlet fever, these cannot be differentiated serologically, nor can they be differentiated by their toxigenic properties as revealed by the Dick test, although in this respect the scarlatinal strain is as a rule more potent than the others."

It is very hard for clinicians to believe that the scarlatinal strains are not to a large extent distinct from the others and that they should not prove recognisable by some means. The work of Drs. J. Smith and F. Griffith, William Gunn and V. D. Allison on serological grouping still affords hope in this direction. At present it is evident that the problem of exact recognition of a scarlatinal strain is by no means so simple as is the detection of diphtheria bacilli, meningococci, or typhoid organisms in carriers of these diseases.

It seems legitimate to assume that the facts ascertained about diphtheria carriers and meningococcal carriers are applicable to the carriers of scarlet fever, and that scarlet fever carriers may be of the precocious, the convalescent, or the apparently healthy, passive type. The precocious carrier is, as a rule, a Dick-positive individual and therefore destined shortly to show his scarlatinal outbreak; the convalescent carrier is, in most instances, a Dick-negative reactor, soon to be rid of his infectious germs; while the healthy or passive carrier is a person also immune, but not always in consequence of a previous attack of the disease, who for shorter or longer periods carries virulent organisms in the throat or, less frequently, in the nose. It is fortunate that chronic carriers are rare. They are likely to bring much opprobrium on those responsible for them until some certain means for their detection is devised. Arbitrarily I suppose we should call an individual who harbours scarlatinal streptococci for more than three months a "chronic" carrier, as in typhoid fever and other infections.

Drs. Gunn and Allison found that of the scarlet fever patients who showed no change in the serological type of their infecting streptococci while under observation, the average time of disappearance of the organism from the nose and throat was 3·6 weeks, the average time of detention in hospital was 6·5 weeks, and 16 per cent. of the patients were still carriers when discharged. Of those cases, on the other hand, in which a change of type occurred (and this they attribute to reinfection from other patients and not to transmutation, since it did not occur in patients who were isolated in cubicles), the average time of disappearance of the organism was 5·9 weeks, the average period of detention was 7 weeks, and on discharge 62·6 per cent. of the cases still carried the hæmolytic streptococcus. Notwithstanding this, the average rate of return cases is only 4 per cent. Apparently it is not correct to say that this is due to lack of virulence in the organisms. Possibly it is due to change to an environment better fitted to cause their disappearance and less likely, by intimate contact, to lead to infection of others.

We may compare these figures with the American experience of J. L. Jones, based on the examination of 100,000 cultures for the detection of hæmolytic streptococcal carriers in Kentucky. This author states that of the frank cases of scarlet fever very few become negative in four weeks, most remaining positive for five or six weeks and some, who usually showed throat and nose defects, became chronic carriers. These usually proved amenable to surgical intervention. It was found that in any group where scarlet fever was prevalent there was a percentage of healthy carriers varying from 25 to 50, while in control groups where scarlet fever was not prevalent only from 4 to 6 per cent. were found to harbour hæmolytic streptococci. It is assumed, but by no means proved, that during an epidemic of scarlet fever hæmolytic streptococci obtained from the throat are of scarlatinal strain. This discovery of a high carrier rate amongst the general population during the prevalence of scarlet fever has an interesting parallel in what is known to occur when cerebro-spinal fever is epidemic. Apparently, when carriers are active distributors, a profuse growth is likely to be obtained from their throats. Scanty growths, as is the case with diphtheria carriers, seem to indicate feeble powers of spreading infection unless augmented by the supervention of catarrhal disturbance. Negative cultures spell safety.

The practice of immunising nurses against scarlet fever and diphtheria has brought to light another aspect of the carrier problem. These nurses may become carriers, either as the result of an attack of tonsillitis, which is the usual event, or without it, and the streptococci of scarlet fever or the bacilli of diphtheria may be recovered from their throats. Fortunately this is not very common.

On discharge of patients from hospital, as a matter of precaution, we advise them to spend a week or two in the open air, to avoid any intimate contacts, especially with children and, if possible, to stay for a time with adults who are known to be immune; also to regard any recurrence of catarrh or nasal discharge as a danger signal. That some convalescents and also some individuals who have never to their knowledge had an attack of scarlet fever can be efficient distributors of infection for months is now well established. Fortunately such cases are exceptional. Such chronic carriers may appear to be quite healthy, but sometimes they have enlarged tonsils and nasal obstructions.

In conclusion I acknowledge with gratitude the ungrudging assistance which I have received from many friends and colleagues in the preparation of these lectures. Amongst others I am particularly indebted, on the pathological side, to Dr. J. Bamforth, Dr. G. A. H. Buttle, and Prof. C. C. Okell, and for clinical assistance to Dr. R. Massingham, resident medical officer at the London Fever Hospital, and Dr. J. H. Prior of the Isolation Hospital, Coppetts-road.

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INTESTINAL TUBERCULOSIS

ITS EARLY DIAGNOSIS, TREATMENT, AND PREVENTION

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FOR many years it has been thought, and with much justification, that the onset of intestinal tuberculosis meant the rapid death of a patient already suffering from pulmonary tuberculosis. This standpoint is still valid to-day if the diagnosis is first made when such signs and symptoms as profuse diarrhœa, anorexia, swinging temperature, abdominal pain and tenderness, and general body wasting make their appearance. These are the signs and symptoms of advanced tuberculous enteritis, and like advanced pulmonary tuberculosis it is notoriously difficult to cure. The methods which have been evolved during the last 30 years for the early diagnosis of pulmonary tuberculosis, together with special methods of treatment and prevention have given this condition a more favourable prognosis. We are beginning to realise that the manifestations of pulmonary tuberculosis range in severity from comparatively mild illnesses like influenza to the grave and fatal types of the advanced disease. We know too that if it is diagnosed in its early stages, pulmonary tuberculosis can be controlled, and in many cases cured. There is a parallel between our knowledge of pulmonary tuberculosis 30 years ago and that

of tuberculous ulceration of the intestine to-day. We are at the beginning of a new period in the early diagnosis, prevention, and treatment of the latter condition; and it is noteworthy that the main factor in the early diagnosis of both the pulmonary and intestinal forms of tuberculosis has come from radiology.

During my tenure of the Dorothy Temple Cross Research Fellowship in Tuberculosis I had an opportunity of observing at Saranac Lake, U.S.A., where most of the pioneer work on this subject has been done, the procedures by which an early diagnosis may be made, and also a good deal of the experimental and pathological work on the subject. Almost pari passu with the evolution of a rational form of early diagnosis there have grown up at Saranac Lake and in the United States what appear to be sound methods of treatment and prevention of intestinal tuberculosis.

A Note on the Pathology

Before considering the main thesis of this paper it will be well to pass in review our present knowledge of the underlying pathology. Tuberculosis of the bowel with subsequent ulceration occurs primarily in the ileocæcal region in 85 per cent. of cases. This fact has been established by studies of autopsies and also by animal experiment, by which it has been shown that whether tubercle bacilli are introduced by ingestion or by the blood stream, the first lesions appear round the cæcum, ileum, and the first part of the ascending colon. The reasons for this are probably:—

1. Tuberculosis is a disease which first attacks lymphoid tissue, and in the bowel this tissue, in the form of Peyer's patches and solitary follicles, is more abundant in the last part of the small intestine.
2. Most of the infection with tubercle bacilli in human tuberculosis is brought about by the ingestion of sputum and direct contact of the bacilli with the mucous membrane.
3. The bowel contents remain for a fairly long period in the last part of the ileum, being held up to a certain extent before passing through the ileocæcal sphincter; they remain for a longer period in the cæcum on account of the antiperistalsis in the large bowel, and because of this delay there is more chance of infection of the mucous membrane.
4. If the patient is constipated the contents of the bowel may become dry and set up in the mucous membrane a catarrhal condition which predisposes to infection by tubercle bacilli. It is well known that the bacilli can pass through normal mucous membrane without causing lesions.

In studies of autopsies on patients dying of pulmonary tuberculosis early lesions are often found in the bowel, even when there were no symptoms of enteritis during life. In these cases the majority of these localised lesions are found in the ileocæcal region. When, at autopsy, extensive ulceration of the intestine is found, the ulcers are seen to be older and more numerous in the same area.

Most cases of secondary intestinal tuberculosis have pulmonary cavitation, and Gardner,[1] in his study of autopsies, thought at first that ulceration was a regular concomitant of a pulmonary cavity. Later he found that this was not necessarily true. In 173 cases with cavities in the lungs he found that 85 per cent. of them had intestinal tuberculosis; in a smaller group of 21 cases without cavitation, 52·3 per cent. showed ulceration of the intestine. His tables show that the amount of tuberculous enteritis is directly proportional to the degree of activity in the lungs. Thus in his series intestinal tuberculosis was present in 90 per cent. of cases with exudative pulmonary tuberculosis; in 48 per cent. of those with proliferative, and in 5 per cent. of cases with fibrous pulmonary tuberculosis. Goldberg, Sweany, and Brown[2] found that in two types of advanced pulmonary tuberculosis no intestinal ulcers are found at death—viz., in acute tuberculous pneumonia and in long-standing fibroid pulmonary tuberculosis. Histologically Gardner noted that the disease commences in the submucous lymphoid tissue, that it spreads locally, and finally invades the mucosa to cause ulceration. Further extension of the process occurs locally and also through the lacteals. In comparing the X ray and post-mortem findings, he found that the radiological diagnoses were for the most part correct when ileocæcal tuberculosis was present, but that the involvement of the small intestine was more extensive than was suspected after examination by barium meal.

EXPERIMENTAL

The experimental production of intestinal tuberculosis is difficult. Villemin,[3] in 1868, was the first to produce it in guinea-pigs by feeding them on tuberculous sputum. After three months a few of the animals were found to have ulceration of the cæcum and the small bowel. Chaveau, in 1869, reproduced the disease in mountain heifers, and later in cattle, and he confirmed Villemin's work on guinea-pigs.

A number of other workers since that time (and their names do not make a long list) have reproduced it in various animals. Among them may be mentioned Dobroklonski[4] who, in 1890, after feeding rabbits on pure cultures of tubercle bacilli, found that after ten days isolated follicles in Peyer's patches began to swell, after which the tuberculous process advanced rapidly. By the twentieth day miliary tubercles confined to the ileum and cæcum were found in the solitary and aggregate follicles. He also showed that tubercle bacilli can pass through a normal intestinal mucous membrane. Calmette,[5] in 1924, showed that intestinal tuberculosis could be reproduced in animals by the intravenous injection of tubercle bacilli; and Branch, Steenken, and Petroff,[6] in 1927, inoculated virulent tubercle bacilli (Trudeau's culture H.37) into the left ventricle of 23 guinea-pigs in single and repeated doses. In 17 of the animals tubercles developed in the lymph follicles of the gut mostly about the cæcum. Next in order of frequency the ascending colon and ileum were infected. With Calmette, these workers lean to the view that intestinal tuberculosis is a blood-borne infection. Medlar and Sasano,[7 8] after experimenting on guinea-pigs by subcutaneous injection of virulent tubercle bacilli (H.37), came to the conclusion that in their series of animals the intestinal tuberculosis was produced by tubercle bacilli excreted in the bile, and they could find no evidence of hæmatogenous infection.

An important series of experiments which have a bearing both on the pathology of the condition and also on its treatment and prevention is that of Smith and McConkey.[9]

These workers, in 1929, fed 37 guinea-pigs on a diet deficient in vitamin C or in vitamins A, C, and D, and at the same time gave them by mouth 0·5 c.cm. of tuberculous sputum daily. Most of these animals developed intestinal tuberculosis. Thus 26 of them had 1 to 30 open ulcers of the intestine; 6 had caseous tubercles, not ulcerated; and 5 had a normal alimentary tract. In contrast, another batch of 35 animals received the same number of tubercle bacilli each day together with a diet which included vitamins A, C, and D (tomato juice, cod-liver oil, cabbage leaves). Of these animals 24 at autopsy had a normal intestinal tract; 8 had 1 to 10 caseous tubercles in the intestine; and 3 had open ulcers.

Gardner[10] repeated this work in fowls, using avian tubercle bacilli as the infecting agent, and got similar results.

Early Diagnosis

The methods of early diagnosis may be divided into three groups: radiological, clinical, and laboratory.

RADIOLOGICAL

The first worker to use radiological methods was Stierlin,[11 12] who in 1911 published an article in which he described six cases of cæcal tuberculosis and one of non-tuberculous colitis confirmed at

operation. He says that "in infiltrating and ulcerative involvement of the cæcum and ascending colon there is an absence of the normal shadow as seen in the radiogram six or seven hours after the barium meal, while the terminal ileum and transverse colon are filled. Consequently the early as well as the later stages of so-called cæcal tuberculosis can be diagnosed by this method when they cannot be detected by ordinary clinical methods." Pirie [13] also, in a note in a paper published by Archibald in 1917 on the rôle of surgery in the treatment of intestinal tuberculosis, recorded somewhat the same findings as Stierlin. But little notice was taken of these two papers until in 1918, Brown and Sampson,[14 15 16 17] of Saranac Lake, without knowing of Stierlin's or Pirie's work, began to X ray the alimentary tracts of patients suffering from pulmonary tuberculosis in the hope of finding some radiological evidence for an early diagnosis of intestinal ulceration, and from their work has arisen an intensive study of the subject.

Brown and Sampson in examining the alimentary tract by barium meal found that, when tuberculous ulceration was present, there was general hypermotility of the bowel, and spasm and filling defects in the ascending colon—i.e., the barium could be seen in the small intestine and in the transverse colon, but the ascending colon and cæcum were in many cases not seen owing to the absence of barium. In a few cases a persistent filling defect pointing to the presence of an actual ulcer was noted. After much investigation they found that the X ray diagnosis of intestinal ulceration depends generally on the changes in the functional activity rather than on the detection of definite ulcers, and that in this respect it differs from the diagnosis of gastric ulceration. In the stomach the functional activity depends not only on changes occurring in the organ itself, but also on changes in other parts of the intestinal tract reflexly affecting the stomach. Such reflex changes, as far as they were able to determine, rarely occur in the large bowel.

The cases of pulmonary tuberculosis whose alimentary tracts they examined by X ray fell into three groups: (*a*) the first group which gave negative results both by screen examination and by films taken at the seventh, eighth, ninth, and twenty-fourth hours; (*b*) the second or positive group in which by barium meal the local and often the general motility was found to be increased, and certain portions of the bowel, usually the cæcum and ascending colon, were not seen filled with barium, or only momentary; and (*c*) the third group which contained doubtful cases in which less characteristic spasm of the bowel occurred. The main features of the findings in the second or positive group were:—

1. General hypermotility with complete or nearly complete emptying of the colon in 24 hours.
2. Failure of the cæcum or ascending colon and hepatic flexure to retain the barium.
3. The presence of spasm or spastic filling defects, irregular contour, and absence of haustrations in the ascending colon.
4. Segmentation of the coils of small intestine with or without some dilatation of the coils.
5. Ileal stasis and gastric retention. They found that examination of the patient by barium enema in some cases confirmed the findings of the meal in respect to the large bowel, but that in some cases the X ray picture was normal even when that of the meal was positive. On the whole they think that the meal is more reliable than the enema.

It is important to understand that these findings described by Stierlin, Pirie, Brown, and Sampson indicate only the presence of ulcers, and that they give no actual radiological clue to the type of ulceration. Other types of ulceration of the intestine, however, do not occur primarily in the ileocæcal region. In patients with pulmonary tuberculosis the tuberculous nature of the intestinal ulcers can be inferred with a considerable degree of probability. Again, it must be understood that the method might not reveal the whole extent of ulceration of the bowel, and it is only certain when the ileocæcal region is involved. In adhesive tuberculous peritonitis, however, X ray examination will show the matting together of the intestinal coils and sometimes dilatation of part of the small intestine.

These radiological signs were found nearly always when well-marked symptoms of intestinal tuberculosis were present; frequently when there were slight abdominal symptoms; but in some cases when routine barium meals were done the X ray signs were present without symptoms. In many cases the signs disappeared under appropriate treatment or when spontaneous healing took place. In these facts lie the value of routine barium meal examination; it enables one to diagnose or suspect the presence of early intestinal tuberculosis, to institute early treatment, and to observe its efficacy or otherwise by radiology.

Other lesions of the bowel which have to be taken into consideration during the X ray examination include: (1) subacute or chronic appendicitis; (2) malignant growth of the bowel; (3) ulceration of the intestine from any other cause—e.g., amœbic, dysenteric; (4) diverticulitis; (5) hyperplastic tuberculosis of the cæcum; and (6) achylia gastrica [17] and hyperthyroidism. A consideration of the clinical features together with the X ray findings will, in most cases, differentiate these conditions. Tuberculous ulceration of the appendix does occur, but it is rarely localised to that structure, and in hyperplastic cæcal tuberculosis there is definite tumour formation with a characteristic X ray picture. The possibility that dysenteric or amœbic ulceration of the colon, new growth, or diverticulitis, &c., might complicate pulmonary tuberculosis, should always be kept in mind.

CLINICAL

The signs and symptoms of advanced tuberculous enteritis are well known, but the intensive X ray study of cases of pulmonary tuberculosis has helped in determining what are the early signs and symptoms of the condition. Brown and Sampson came to the conclusion that the early clinical features of intestinal tuberculosis are vague, but that tuberculous patients with all or any of the following symptoms should be examined radiologically: (1) A slight rise of temperature without an increase of the pulmonary symptoms. (2) Failure to gain weight in patients with chronic pulmonary tuberculosis. (3) Digestive disturbances, such as prolonged or marked anorexia, regurgitation, nausea, and vomiting or flatulence. (4) Slight abdominal discomfort or rarely actual pain. (5) Constipation or constipation alternating with diarrhœa. (6) Marked nervousness. My own observations on a more limited number of cases lead me to agree with Brown and Sampson in regard to the importance of these early symptoms. It should be noted that abdominal pain and diarrhœa are not early symptoms of tuberculous enteritis, and that on physical examination of the abdomen very few positive features can be found. Slight tenderness on palpation over the ileocæcal region is a comparatively early sign.

LABORATORY

Very few laboratory tests are of value in the early diagnosis of intestinal tuberculosis. The presence of tubercle bacilli in the stools is not a proof that

tuberculous ulceration of the intestine is present, especially when the patient has pulmonary cavitation and tubercle bacilli in the sputum. Tubercle bacilli can be found in the stools of most patients suffering from pulmonary tuberculosis, because the sputum is voluntarily or unconsciously swallowed. In the rare cases, however, when there are no cavities in the lung and no tubercle bacilli in the sputum, their presence in the stools might then be regarded as diagnostic evidence, especially when associated with intestinal symptoms. The presence of blood and pus in the stools is strong evidence of intestinal ulceration when the patient has pulmonary tuberculosis and intestinal symptoms. Occult blood may be found even in early ulceration, and when found it is strong evidence, but it is not a constant finding. The blood picture usually shows a moderate leucocytosis, in which the neutrophil polymorphs are the predominant cells. The tuberculin reaction is not of much assistance in establishing a diagnosis on account of the coexistence of pulmonary tuberculosis.

Treatment

The estimation of the value of the various methods of treatment of intestinal tuberculosis is difficult because the lesions, as in the case of pulmonary tuberculosis, may heal in one part and progress in another. The alimentary tract also, contrasted with the lungs, has a greater tendency to spontaneous healing; and although healing of intestinal ulcers may occur while the pulmonary lesion advances there is generally more chance of complete healing if the stream of tubercle bacilli from the lungs into the intestine is abolished, and the possibility of reinfection limited. That is to say, the first essential in the treatment of secondary intestinal tuberculosis lies in the successful control of the pulmonary condition. In some cases, however, the lung lesion may have healed while the intestinal ulceration continues to spread.

The methods of treatment of intestinal tuberculosis are numerous, but they may be conveniently grouped under four headings.

HELIOTHERAPY AND HIGH VITAMIN DIET

These two methods are closely allied in that they both aim at an increase in the supply of certain vitamins to the body and thus at raising its resistance to infection and also at stimulating healing.

Heliotherapy for some years has been successfully used in the treatment of surgical tuberculosis, notably by Rollier[18] in Switzerland and by Gauvain[19] in this country. Rollier, between 1903 and 1913, also treated 15 cases of ileocæcal tuberculosis by natural heliotherapy, and of these 9 healed, 4 improved, and 2 died. Unfortunately, as Brown and Sampson point out, it was difficult to estimate the results of treatment until a sound method of diagnosis was established, and for this reason little or no interest was taken in the subject. But since the latter workers have consolidated the radiological method of diagnosis which also permits one to follow the progress of the cases, large numbers have been treated by them and by Mayer[20] in Saranac Lake, as well as by Blanchet,[21] Stewart,[22] and others.

The technique of using artificial light treatment varies, some workers favouring the mercury-vapour lamp and others the carbon lamp. The general method is that limited areas of skin at first should be exposed to the light for very short periods, and then gradually the times of exposure and the extent of the skin exposed should be increased in such a way that severe local and general reactions are avoided. If erythema is produced it should only be slight and should fade rapidly; the effect on the temperature should be watched, as hyperpyrexia is particularly harmful to the pulmonary lesions. It is said that patients whose skin becomes pigmented easily have a better prognosis, and blonde people in whose skin the precursors of pigment are deficient cannot stand the effect of light as well as brunettes.

The reported results of treatment are good, in that about two-thirds of all cases treated show definite improvement. For instance, Erickson[23] reports that of 81 cases of tuberculous enteritis, 69 (85·2 per cent.) responded favourably to treatment; the symptoms were entirely relieved in 24·7 per cent.; in 47 per cent. they were much improved; and in 13·5 per cent. they were slightly but definitely relieved. In 14·8 per cent. no benefit was observed and all these cases were of the advanced type. In his detailed study on the effect on symptoms he showed that pain, nausea, and vomiting are quickly relieved, and that diarrhœa and digestive disturbances are also relieved, but not so quickly and not to the same extent. The effect on symptoms is greatest and more rapid when the light treatment is started soon after their onset. If the symptoms have been present for a long time a corresponding period of treatment is sometimes necessary before much improvement is observed. Brown and Sampson,[24] in 1927, published the results of 463 cases treated by artificial heliotherapy. These were made up of 6 minimal, 245 moderate, and 212 advanced cases; of these 70 per cent. were living and 30 per cent. were dead. In a smaller group of cases not so treated, 20 per cent. were living and 80 per cent. were dead.

The high vitamin diet, a method of treatment which has arisen out of the work of Smith and McConkey already mentioned, consists in the administration of ½ oz. of cod-liver oil and 3 oz. of tomato juice three times a day. In this way the patient receives large amounts of vitamins A, C, and D. McConkey[25] has compared the results of treatment of three groups of cases, in which the first 28 were treated symptomatically, the second 50 received artificial heliotherapy, and the third 50 were given the high vitamin diet. All were proved cases of intestinal tuberculosis with a positive X ray picture.

He found that while the "symptomatic" group did badly (20 dead out of 28), and the second group did comparatively well, the third group (high vitamin) showed much the best results. Of 50 cases in the last group, all of whom had tubercle bacilli in the sputum and 47 had pulmonary cavities, 43 were alive. He examined 35 of his three groups of cases by barium meal after treatment and found that in 13 of them the picture had changed from positive to negative—9 on the high vitamin diet and 4 on heliotherapy. In addition to these 128 cases, a further group of 59 patients showed doubtful X ray evidence of intestinal tuberculosis. Of these 17 were treated symptomatically, 29 with heliotherapy, and 13 with the high vitamin diet. Six of the first 17 subsequently developed definite evidence of intestinal tuberculosis, whereas the 42 treated by heliotherapy and vitamins gained weight and lost all suspicious X ray evidence of the disease.

In some patients placed on this diet the symptoms may disappear rapidly, but usually some weeks elapse before a noticeable improvement takes place. For the immediate relief of symptoms such as pain and diarrhœa, intravenous injections of calcium chloride may be necessary. It is advisable to continue the high vitamin diet for six months or a year, and to control the effect by X rays as well as by clinical observation. The oil and tomato juice (or orange juice) is more palatable if given ice-cold and after meals. As McConkey points out, this method is more economical than artificial heliotherapy, and if the diet is given to all cases of pulmonary tuberculosis there is less danger of the development of secondary intestinal ulceration.

DIETETIC

The diet should be regulated until the diarrhœa stops. In patients who have an irritable bowel

the act of eating, independently of the nature of the food taken, sets up reflex peristalsis of the terminal ileum and colon. Some foods however set up more irritation of the bowel than others, and amongst these may be included those that cause fermentation, such as peas, beans, potatoes, cabbage, and pastry. The gas formed in the intestine produces distension which is one of the main stimuli for peristalsis. Foods which leave a good deal of residue in the bowel also tend to increase the diarrhœa by irritating the inflamed mucous membrane. Alvarez [26] has introduced what he calls a smooth diet, designed by elimination of as much cellulose as possible to reduce the residue and lessen the stimuli for peristalsis.* Lean meat is the basis for the diet. Lassablière [27] recommends a diet of condensed milk, diluted with four parts of rice water, a teacupful being given every three or four hours. On this diet the number of stools is reduced quickly in two or three days, after which other ingredients may be added gradually to the diet. Marcus Paterson [28] advanced the opinion that a milk diet is bad for patients with tuberculous enteritis, because he found that it contributed largely to the foul odour of the stools and to the number of organisms in the intestinal tract. Patients who respond favourably to heliotherapy and the high vitamin diet can very soon take ordinary food.

MEDICINAL AND SYMPTOMATIC

Pain and diarrhœa are the two most common symptoms of moderately advanced and advanced intestinal tuberculosis, and the most efficacious way to relieve them is to give the patient an intravenous injection (5 c.cm. of a 5 per cent. solution) of calcium chloride. Calcium therapy in tuberculosis was first introduced in 1917 by Mandl,[29] and applied to intestinal tuberculosis by Saxtorph [30] in 1918. In the treatment of diarrhœa it has a sound physiological basis, because, as Hunter [30] and his associates and others have shown, during hypercalcæmia the irritability of the nervous and muscular system is lessened. The mechanism of the effect of calcium on pain is not so clear, but clinically there is a striking amelioration of this symptom after single or repeated intravenous injections of calcium chloride. In some cases the pain is abolished almost instantaneously after a single injection. If the barium-filled bowel is watched under the screen during the administration of calcium, it will be found that while the pain is relieved the cæcum and ascending colon still remain in a state of spasm, or at least the filling defects in these portions of the bowel persist for some weeks or sometimes months. I have observed this phenomenon in a number of cases with McConkey.[31] Rist, Ameuille, and Ravina [32 33] find that it is sometimes necessary to give larger doses of calcium, and on occasions they have used 2 to 4 c.cm. of a 50 per cent. solution. Fishberg [34] found 5 c.cm. of a 5 per cent. solution useful in controlling the diarrhœa of what he regarded as early intestinal tuberculosis. Brown and Sampson advise the use of calcium if the diarrhœa is not controlled by the administration of castor oil and by restriction of the diet.

The oral administration of many drugs has been recommended for the treatment of the diarrhœa, and some workers advise the injection of enemata either of saline alone or combined with tincture of opium, or one of the silver preparations such as albargin or silver nitrate. Gant [35] recommends colonic lavage with silver nitrate through an appendicostomy. But it is remarkable that the institution of heliotherapy, the high vitamin diet, and calcium therapy often renders it unnecessary to use these subsidiary methods of treatment. The symptomatic treatment of the constipation, intestinal hæmorrhage, nausea, and vomiting in intestinal tuberculosis differs in no way from the usual medical measures.

SURGICAL

Patients with pulmonary tuberculosis do not stand major operations well, especially under general anæsthesia, and in any case the indications for surgery in intestinal tuberculosis are limited. In the rare cases in which one can be certain that the ulceration of the intestine is confined to a small area, the segment of the bowel may be excised with good results. The localised type of hyperplastic cæcal tuberculosis is in a class by itself; surgical intervention is to be advised in almost every case, especially as the lungs are often free of tuberculous lesions.

Prevention

The prevention of secondary intestinal tuberculosis depends primarily on the early diagnosis and successful treatment of the pulmonary tuberculosis. The patients should be warned against swallowing the sputum, as this is the chief mode of infection of the intestines in human tuberculosis. But it is practically impossible to prevent some at least of the tubercle bacilli from reaching the intestines. The patients should not be allowed to become constipated, and any catarrhal condition of the bowel should be quickly treated. In patients who show achlorhydria it is as well to give regular doses of hydrochloric acid; although the acid has little or no antiseptic action against tubercle bacilli, when achlorhydria is present the ulcers are said to occur higher in the ileum and jejunum.

The general resistance of the patient to infection should be built up by an adequate diet, and particularly by a large supply of vitamins A, C, and D, in the form of cod-liver oil and tomato juice or orange juice. All patients with pulmonary tuberculosis should be given the high vitamin diet as a routine measure. At Ray Brook Hospital, near Saranac Lake, every patient with pulmonary tuberculosis takes ½ oz. of cod-liver oil and 3 oz. of tomato juice after each meal, and as a result the incidence of tuberculous enteritis is considerably lower than before the procedure was adopted.

* This diet is given in detail in Brown and Sampson's book,[14] pp. 285–86.

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RHEUMATIC AFFECTIONS OF TENDON AND MUSCLE ATTACHMENTS

("TENDINITIS")

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IN recent years the interest taken in "rheumatic" diseases, or, as I like to call them, "the internal diseases of the organs of locomotion and support," has happily been much on the increase. In the main this interest has chiefly been directed to arthritis, myalgia, and neuralgia. The fact is, however, that the organs of locomotion comprise not only bones, muscles, and joints, but also tendon and muscle attachments. These structures are also often the seat of diseases allied to those affecting joints and muscles.

In the course of examining a large number of rheumatic patients one is struck by the frequency of symptoms encountered in tendon-muscle attachments, not only in connexion with disease of joints and muscles, but also independently. It is important to pay attention to them, not only because of their severity, but because they are amenable to appropriate treatment. This is particularly the case with symptoms and diseased conditions solely confined to tendon and muscle attachments.

POLYTENDINITIS

It may be convenient—at least from a didactic point of view—to distinguish between "polytendinitis" and isolated tendinitis,* between diseased conditions in which a number of muscle and tendon attachments present symptoms, and those in which the affection is confined to one or two tendon attachments. In "polymyalgia" and polyarthritis of different kinds it is exceedingly common to meet with tendinitis (in the meaning I am attaching to it here) as an important part of the clinical picture. We all know, for example, that, particularly in stout subjects—in whom tender areas (myalgia) are commonly found in almost all muscles of the extremities and in large parts of the musculature of the trunk—the muscle and tendon attachments are as a rule much more tender than the muscles themselves, and often there is also an obvious infiltration, a doughy swelling, or whatever name one likes to give it.

* In what follows I shall use "tendinitis" to express, briefly, a condition of tenderness, swelling, and pain of a tendon or muscle attachment—naturally without thereby wishing to infer that true inflammatory changes are present in every case.

On the other hand it is well known that in nearly all forms of polyarthritis, acute as well as chronic, similar symptoms from muscle and tendon attachments are met with. In no small number of cases the most severe symptoms of a polyarthritis do not emanate from the diseased processes in joint cartilage and synovial membrane, but from the tendinitis present. This is the case not only in the true infective forms of arthritis, in which true inflammatory processes are present, but also in other forms of polyarthritis—e.g., the climacteric form—and in osteo-arthritis deformans. It seems to me that in descriptions given in text-books scarcely sufficient stress is, as a rule, laid on the fact that peri-arthritic changes generally form part of the clinical picture—and among others tendinitis. In the arthritic condition so frequently found in women during the climacteric period, the articular symptoms, particularly those in finger- and knee-joints, are almost exclusively confined to the tendon attachments close to the joints, and are thus peri-articular. This is especially evident in the knee-joints; here it is often possible to verify that the capsule itself is not the seat of either swelling or tenderness, while swelling and intensive tenderness to pressure are to be found, above all, over the muscle attachments at the internal femoral condyle, over the tendinous sheets running along the medial aspect of the knee, over pes anserinus, and, not rarely, also over ligaments and muscle attachments at the lateral aspect of the joint and over the quadriceps tendon. It is frequently these tender tendon attachments that cause the very troublesome "pains in the knees" on walking, especially on descending stairs and hills. Where no synovitis is present it is easy to overlook these cases of tendinitis.

This climacteric arthritis of the knee has usually, if properly treated, a good prognosis; it is, however, often complicated by arthritis deformans, particularly in persons who have overstrained their legs a great deal during work, or who have to carry heavy loads. Even in cases complicated with arthritis deformans the most troublesome symptom that the patients complain of is often pains elicited in the tendon and muscle attachments.

If these forms of tendinitis constituting part of the clinical picture in different forms of polyarthritis are of no mean practical importance, the types of tendinitis that appear as an independent entity are of still greater interest, especially as the correct diagnosis is frequently missed. This condition may occur as polytendinitis or as localised tendinitis.

There seems to be no doubt that a true rheumatic infection, rheumatic fever, may run its course with symptoms from muscle and tendon attachments only, without any true joint symptoms whatever. I have encountered quite a number of cases which have run the following typical course. A week or two after an attack of tonsillitis, the patient is taken ill with pains and tenderness of the "joints" with fever, mild leucocytosis, increased sedimentation-rate, and so on. On physical examination one finds marked tenderness and pain on movement distinctly localised to a varying number of tendon and muscle attachments close to articulations, but there is no effusion in the joints, no capsular swelling, and no tenderness over the capsules themselves—i.e., no arthritis in the true sense of the word. Moreover, in these cases it is nearly always possible to detect tenderness and often swelling of tendon attachments that are not close to a joint—e.g., at the insertion of the Achilles tendon, at the anterior lower border of the calcaneus, or at the trochanter major. These symptoms from the tendon

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attachments often show the migrating course and development characteristic of acute polyarthritis.

The onset of disease, the fever, the blood picture, the increased sedimentation-rate, and the migrating course render it highly probable that we are dealing here with the same condition as the ordinary acute rheumatic polyarthritis, and this probability becomes nearly a certainty when it is found that in a very great number of these acute forms of polytendinitis there are definite symptoms of acute heart lesions. On auscultation we often find typical signs of endocarditis, and still more frequently do we find electrocardiographic signs of myocarditis: prolonged conduction time, pathological Q R S complexes, not rarely bundle branch block and an obliterated or negative T wave. In most cases all these signs of cardiac lesion gradually abate at the same time as the symptoms from the tendon attachments disappear: in some cases, however, an organic lesion persists.

The whole course thus tallies so well with that of acute rheumatic polyarthritis that there scarcely seems to be any doubt that we are dealing here with the same virus. Moreover, cases occur in which the clinical picture is that just described, except that later on in the course of the illness true articular symptoms, e.g., synovitis—usually slight and transient—also appear in one or other joint.

This condition of polytendinitis, which all evidence goes to show is based upon a true rheumatic infection, is interesting in that it clearly shows that the rheumatic infection attacks not only the endocardium and synovial membranes but also fibrotendinous tissue. Furthermore, it is practically important that we should know of this condition, since, if we do not recognise it as a sign of rheumatic infection, we are likely to regard it as a less severe condition, especially since the fever is as a rule mild and not generally observed by the patients. Particularly is there a great risk of overlooking the correct diagnosis if the illness, as happens not infrequently, only starts with, for instance, pains underneath the heels or at the insertions of the Achilles tendons. I have seen several such cases in which the pains were regarded as due to over-exertion and treated as such, but which later developed into quite a virulent progressive arthritis and endocarditis. I have even known one or two cases of that nature which finally succumbed to endocarditis. It should be an important rule, therefore, in all patients who present tender heels not obviously due to overstrain to test the sedimentation-rate and take an electrocardiogram; in no small number surprisingly clear signs of a present infection will be found.

LOCALISED TENDINITIS

Among the best known forms of "independent" tendinitis is the condition termed in Sweden peritendinitis calcarea (or non-calcarea) (in other countries often described as bursitis calculosa). This condition is probably too well known to require any more detailed description. I would only draw attention to the fact that it is not entirely—although it is admittedly most often—confined to the deltoid region, because not infrequently analogous forms of peritendinitis are found at the tendon insertions of the great trochanter and at the tendinous sheets on the inner aspect of the knee-joint. Renck, Sandström, and Kahlmeter [1] have shown on extensive clinical material that deep Rontgen treatment has the most rapid effect in this condition.

Closely allied are two fairly common conditions, the so-called epicondylitis of the humerus and the "calcaneal spur." The epicondylitis is characterised by intense tenderness to pressure on the lateral condyle of the humerus, often also on the lower border of the head of the radius, with pain and weakness where the muscles of the forearm are attached. This condition occurs among certain occupations, such as those of smiths, drillers, laundry-women (wringing of clothes), and tennis-players, and is obviously caused by over-exertion. It is generally treated by rest, heat, and massage, but is rather refractory to this therapy; a much better effect, and above all a more rapid one, is obtained by Rontgen treatment.

The clinical feature of "calcaneal spur" is intense pain on pressure either at the insertion of the Achilles tendon or at the attachment of the plantar muscles to the anterior border of the lower surface of the calcaneus. Radiograms often—but by no means always—reveal a shadow as dense as bone extending from the os calcis for a few millimetres into the tendon. This shadow is probably sometimes due to calcified deposits in the bursa or in the tendinous tissue itself—thus in complete harmony with other forms of peritendinitis calcarea—sometimes it is probably a true ossifying tendinitis. In the former cases, at least, the spur may disappear completely after appropriate treatment. The best treatment here, as in all forms of tendinitis, is Rontgen irradiation. Treatment by heat, massage, &c., is rarely of any use; orthopædic supports sometimes do good. Surgical operations have been employed fairly often for this complaint.

There is little doubt that calcaneal spurs are most often met with in persons who either have to stand a great deal in their work or who are in some way overstraining their tendon insertions (runners, jumpers). It also occurs fairly often, as one of several symptoms, in polyarthritis—acute, secondary chronic, or primary chronic. In older text-books it is often regarded as a manifestation of gout; certainly, true attacks of gout sometimes occur at this site. Similarly, calcaneal tenderness is often found in persons with a "gouty habitus": the stout, "full-blooded," and "red-faced" type of individual. Of course it may be said that subjects of this constitutional type readily get calcaneal pains on account of their weight, just as they are exceedingly often troubled with pains in other functionally overstrained muscle and tendon attachments, such as the inner aspect of the knee-joint (pes anserinus) and the lower insertions of the erector spinæ (lumbago). On the other hand, one cannot readily get away from the fact that these subjects with an "arthritic" constitution—to use an expression of the French—are also clearly liable to pains in such tendon and muscle attachments as are not exposed to pressure or functional overstrain.

TENDINITIS OF THE QUADRICEPS INSERTION

Finally, there remains a form of tenderness of tendon attachments which is probably closely allied to those just referred to but which seems to be much less well known. I have not found it mentioned anywhere, although it does not seem to be so very uncommon and, moreover, it is of no little importance in practice. I refer to tendinitis of the insertion of the quadriceps tendon at the upper border of the patella. I think I can best describe the clinical picture of this condition by giving details of my first case.

A married lady, aged 46, was referred to me by two colleagues who had been unable to find any explanation of her troublesome complaints. Her menopause had started 12 months before. About two years before she had begun fairly suddenly to notice, as she expressed it, her legs getting weak; she was unable to "get her legs along with her" in walking. Gradually she developed real pains in the "knees" and upwards along the thighs on walking. When I saw her she said she was unable, on account of these pains, to walk

[1] Proc. Roy. Soc. Med., 1932, xxv., 1117.

on level ground for more than about ten minutes, and not at all on stairs or downhill. My colleagues had found no swelling of the knee-joints, no limitation of movements, and no tenderness over the joint capsule. In the recumbent position she did all movements in the knee-joints without any pain at all, but as soon as she began to walk she suffered pain. Radiography revealed an exceedingly slight osteo-arthritis deformans which could not account for her severe symptoms; beyond this nothing was seen.

On examining her I found at first, like my colleagues, nothing positive, but when I pressed my finger on the insertion of the quadriceps tendon, immediately on the upper border of the patella, there was extremely intense pain and she called out: "I never noticed I was tender there before and none of the many doctors I have seen has pressed just on that spot." This rather surprised me at first, but on further consideration I found that when examining a knee-joint one generally palpates higher up in the quadriceps, on the joint capsule and its line of reflection, and at this place the patient was not at all tender.

The questions now raised were: what did the tenderness of the border of the patella signify, and could it explain her symptoms? I was reminded of the tenderness obtained on pressure over the heel in cases of calcaneal spurs, and since I had earlier seen very good results from Rontgen treatment of calcaneal spurs I suggested she should try this treatment (she had already had all other kinds of physical treatment without any benefit). In a subsequent radiogram a small spur formation was seen at the upper border of the patella which had evidently been overlooked on previous examinations. After treatment the patient returned home. The husband informed me two months later that a fortnight after concluding the treatment his wife's complaints had entirely disappeared and that she now took daily walks for five or six hours without feeling any discomfort whatsoever.

I have related this case in detail because the clinical history is, as I have found by experience, fairly typical for these cases. No more than a month had passed before I had another similar case: a lady, aged 40, the wife of a colleague, who since her youth had had pains "in her knees," especially on going downstairs. She had tried all kinds of physical treatment. Latterly she had also had aching pains in the thighs at night. In this case, too, tenderness on pressure was distinctly confined to the upper border of the patella, which was the only objective sign, and also in this case the pains completely disappeared after one Rontgen application.

Since I had my attention directed to the clinical picture I have met no less than 25 similar cases during the past two and a half years. All of them have not, it is true, presented this form of tendinitis of the quadriceps as an isolated symptom, about one-third of them having had either a polyarthritis or a polytendinitis. Some of them have presented the picture of climacteric polyarthritis or polytendinitis, but as a rule the quadriceps tendinitis has caused them by far the most severe symptoms. And in more than half the cases the quadriceps tendinitis has appeared as an isolated symptom, as happens in cases of calcaneal spur or, rather, calcaneal tendinitis. In many cases a spur formation from the upper border of the patella has actually been observed on radiograms. Everybody knows what marked suffering a calcaneal spur may cause, and even if the quadriceps tendinitis does not as a rule cause pains equally severe, it is nevertheless by no means an insignificant complaint of which the practical importance can be disregarded.

On the ætiology of the quadriceps tendinitis it is only possible to speculate. As far as my experience goes, the cause, like that of the pain elicited at tendon and muscle attachments in general, seems to vary from case to case. To my mind it seems clear that over-exertion and other mechanical factors play a great part, perhaps the greatest, and also that constitutional factors are in many cases of importance. The majority of my patients have been females (only five were males), and in most of them the condition has appeared during the climacteric; other forms of tendinitis too, like myalgia, are of course exceedingly common during this phase of life. But I have also met with cases of quadriceps tendinitis, not, it is true, isolated, in which the clinical picture has otherwise been that of an insidious progressive infective arthritis.

I have tried to show, in the first place, that symptoms from tendon and muscle attachments often constitute an important feature of "rheumatic" arthritis of various kinds, both inflammatory and others, and, secondly, that exactly the same changes and symptoms are sometimes encountered alone in tendon and muscle attachments—without simultaneous symptoms from the joints. These "isolated forms of tendinitis" in particular are both of theoretical interest and of practical importance, especially on the one hand, when a polyarthritic-cardiac infection starts with signs of isolated tendinitis and, on the other hand, in cases in which we find a tendinitis, undoubtedly apart from any form of infection, of which the calcaneal spur and the quadriceps tendinitis are typical representatives.

OCCUPATIONAL ASTHMA

WITH REFERENCE TO WOOL SENSITIVITY

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THE preponderance of a particular allergen in any one locality or country may give rise to selective sensitivity so that cases of asthma sensitive to an allergen may occur in a much higher proportion of cases where contact occurs more frequently. The West Riding of Yorkshire in this respect may well have its own asthma problem, since sensitivity to wool occurs much more often here than elsewhere.

The West Riding is by far the greatest woollen district in Great Britain. According to the Census of 1921, of 259,692 persons engaged in woollen and worsted manufacture in Great Britain no less than 206,954, or 79·6 per cent., were in the West Riding.[1] The worsted branch is now carried on almost exclusively in this area, and the woollen branch, though more scattered, has its main centre there. Other districts where woollen industries are carried out but on a smaller scale are the West of England, the border districts of Scotland, Rochdale, Dolgelly and Welshpool in Wales, Witney in Oxfordshire, and Leicestershire. Carpet-making is carried out mainly in the Kidderminster district and also around Halifax and Glasgow. Leeds produces a somewhat wide variety of woollen goods, together with a considerable amount of worsted yarns and cloth. In addition there is a large number of persons employed in the clothing trade.

TABLE I

Asthma with Positive Skin Reaction (119 *cases*)

Allergen.	Cases reacting and percentage.	Allergen.	Cases reacting and percentage.
INHALANTS:—		INGESTANTS:—	
Pollen ..	.. 46 (38·6)	Milk ..	.. 6 (5·0)
Feathers	.. 43 (36·1)		
House dust	.. 26 (21·8)	Egg ..	.. 2 (1·6)
Sheep wool	.. 22 (18·4)		
Cat hair..	.. 19 (16·0)	Fish ..	.. 2 (1·6)
Dog hair	.. 15 (12·6)		
Cotton ..	.. 12 (10·0)	Wheat ..	.. 2 (1·6)
Rabbit hair	.. 7 (5·8)		
Cattle hair	.. 1 (0·8)	Nuts ..	.. 1 (0·8)
Horse dander	.. 1 (0·8)		
Orris root	.. 1 (0·8)		

In Table I. 119 cases of asthma with positive skin reactions have been tabulated in order to show the comparative frequency of sensitivity to various

* With a grant from the Asthma Research Council.

allergens. These protein-sensitive cases have been drawn from a total series of 189 cases of asthma, thus yielding 62·9 per cent. of cases with one or more positive skin reactions. All the cases have been attending the asthma clinic of the Leeds General Infirmary.

Often multiple sensitisation was observed, and in drawing up the Table cases showing multiple sensitivity have been included in two or more groups and have been counted more than once. For this reason the number of positive reactions recorded in the Table is much larger than the number of cases studied. With the exception of six cases tested by the scratch method all the other cases were tested by the intradermal method, using fluid extracts. The series includes all ages but there is a marked preponderance of adult cases.

SENSITISATION BY WOOL

Sensitivity to sheep wool was noted in 22 cases, or in 18·4 per cent. of cases, and was found to be one of the commonest types of sensitivity, occupying fourth place in the list of inhalants in order of frequency (Table I.). Of these wool-sensitive cases 3 were males and 19 were females.

Cases of asthma due to wool have been recorded but the reports have been mostly on isolated cases. Cooke [2] in his series of 327 cases does not mention one which was sensitive to sheep wool. Rowe [3] in a series of 234 cases comprising all ages found sensitivity to sheep wool in 4·7 per cent. of cases. Sensitivity to wool has been found to occur more frequently in children. Thus Rowe [4] in another series of 110 cases in children noted that it occurred in 9 per cent. of cases, while Peshkin [5] in a series of 100 cases also in children found it to occur in 10 per cent. of cases.

In the present series sensitivity to sheep wool has been noted in an unusually high proportion of cases and much more frequently than has been observed heretofore. This may be accounted for by the relatively larger number of cases of occupational asthma due to wool occurring in the West Riding. In Table II. have been tabulated 40 cases of occupational asthma and of these, 19, or 47·5 per cent. of cases, were due to wool, sensitisation having been acquired in the course of occupation in the woollen industries and in the clothing trade.

TABLE II

Occupational Asthma (40 *cases*)

Allergen (positive skin reactions).	Cases.	Occupation.
Pollen	3	Farmers.
Wheat	2	Baker; Salesman—wheat market.
Animal emanations.	8	Furrier (rabbit hair); pigeon breeder (feathers); farmers (2) (horse, cattle, cat, dog, rabbit, pollen); market porters (2) (feathers, dog, cat, rabbit); salesman—furnishers' cushion dept. (feathers); kennel-maid (dog).
Glue	1	Joiner.
House dust ..	3	Shop assistants (2); domestic servant.
Sheep wool ..	19	Weavers (8) (5 wool, 3 worsted); seamstresses (5) (clothing trade); cloth mender (worsted); warper (wool) carpet maker; draper's assistant; employees in clothing warehouse (2).
Cotton	4	Dyer in cotton mill; seamstress; cotton spinner; nurse (surgical cotton).

The duration of exposure to wool at work before symptoms of asthma set in averaged eight years. There was, however, a marked variety of individual tolerance. Some cases developed asthma immediately after exposure or after a few months, while others did not manifest symptoms until many years (up to 18 years) had elapsed. In some cases exposure to wool occurred after the onset of asthma but in most of these cases wool sensitivity was the dominant factor as the patients improved considerably on discontinuing work or on being specifically desensitised to wool.

The majority of the wool-sensitive cases gave positive skin reactions to other allergens but these concurrent sensitisations played a lesser part in the production of symptoms and as a rule wool appeared to be the most toxic allergen. In nine cases the patients gave a positive skin reaction also to cotton and no doubt this was due to the presence of cotton in materials which they were handling.

Sensitivity to wool may occur both to wool in its cruder state (Widal and others,[6] Traubaud and Charpentier [7]) and to wool which has undergone considerable physical and chemical treatment as in the case of wool of woven garments. The present series of cases shows that the latter is by no means an uncommon source of sensitisation, as nearly all my cases of occupational asthma sensitive to wool occurred in weavers or in persons employed in the clothing trade such as tailors and seamstresses. Once the patient has become sensitised to wool it is extremely difficult to shield him completely from the offending allergen. In half the wool-sensitive cases the patient definitely improved on discontinuing work or on changing occupation. Wool, however, is ubiquitous and in many cases it was found that the patient did not materially improve or that the improvement was only temporary until the patient avoided still further contact with wool by not wearing it next to the skin, by avoiding flock bedding, and by using smooth blankets carefully wrapped up in sheets in such a way that the patient did not come into contact with them. The list of articles which may contain wool is very large.[8]

Amongst articles of clothing some common offenders are scarfs, shawls, sweaters, and underwear. It has not been unusual in my experience to find a patient while in the throes of an attack of asthma to be smothered in woollen scarfs, shawls, and blankets, and to discover that the asthma was due to wool sensitivity. The replacement of all woollen garments by silk ones often gave marked relief or was followed by prompt cessation of the attack.

Wool is also used as padding of quilts and as stuffing of mattresses, pillows, cushions, and upholstered furniture. Among household objects which may be made of sheep wool are carpets, rugs, tapestries, toys, and shoe-brushes. Powder puffs are often made of wool, and crude wool grease is used for making soap, while refined wool fat or lanolin is used in salves and in cosmetics and toilet preparations as a base for cream and ointments. In an anhydrous form it is found in face and talcum powders.[9]

Skein wool may give rise to sensitisation in housewives, and two wool-sensitive patients, who have not been included in the group of cases of occupational asthma, had been doing a lot of knitting prior to developing asthma.

In view of the difficulty of isolating the patient completely from contact to wool, specific desensitisation was carried out in 14 cases. A stock sheep wool extract was used and injections were given intradermally at weekly intervals until the full dose was reached when the intervals were increased until the injections were given about a month apart. In three cases the "rush" method devised by Freeman [10] for pollen allergy was adopted, the injections being given every two hours over a period of 3–5 days. No marked systemic reactions have been observed in any of the cases. The majority of the patients

after desensitisation showed a definite increased tolerance and were able to return to their work.

CONCLUSIONS

(1) In 119 cases of asthma with positive skin reactions, sensitivity to sheep wool has been observed in a comparatively high proportion (18·4 per cent.).

(2) The frequency of sensitivity to sheep wool occurring in the West Riding of Yorkshire may be attributed to the woollen industries prevailing in this locality.

(3) In a series of 40 cases of occupational asthma attending the Leeds asthma clinic, 19 cases (47 per cent.) were sensitive to sheep wool and sensitisation had been acquired in the course of occupation in the woollen industries and in the clothing trade.

(4) Specific desensitisation to wool has been carried out in 14 cases with encouraging results.

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Clinical and Laboratory Notes

UNDULANT FEVER DETECTED BY ROUTINE EXAMINATION OF SERA

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IN a paper given to the National Veterinary Medical Congress in 1932 Prof. G. S. Wilson [1] discussed the findings in a series of 136 cases of undulant fever in Great Britain and Ireland of which he had been able to gather records. The diagnosis in these cases had been made by the agglutination test, and in 12 instances had been confirmed by the isolation of the causative organism. Amongst the figures quoted are those recorded by H. Harrison and G. S. Wilson [3] in the examination of sera received for Widal examination in the Public Health Laboratory of Manchester. The cases dealt with in the present communication have been detected in the routine examination of all sera sent in for Widal test. In several instances abortus infection was suspected by the physician in attendance, and a request was made for an agglutination test against that organism.

The total number of sera from patients suffering from pyrexia on which a complete examination for the Brucella and enteric groups was made between January, 1929, and November, 1932, was 1331. Of these 28 agglutinated *Br. abortus* only; 114 gave a significant reaction with *B. typhosus*, 150 with *B. paratyphosus* B, and 1 with *B. paratyphosus* A; so that of the sera examined 19·9 per cent. gave a positive reaction with the enteric group, while 2·1 per cent. were positive for *Br. abortus*, thus indicating that agglutinins for the enteric group were rather more than nine times as frequent as for *Br. abortus*. The percentage of sera giving positive reactions with the latter organism is somewhat less than in the figures collected by Wilson. By calculation from the incidence of enteric fever in England and Wales as given by the Registrar-General's statistics for the three years 1929–1931, it appears from the figures obtained in this examination that the incidence of abortus infection is in the region of 300 per annum. It is doubtful, however, if such a calculation, based on the figures of one laboratory supplying a localised area, can give even an approximate estimate of the general incidence of abortus infection throughout the country.

The sera were tested in dilutions ranging from 1 in 40 to 1 in 2560. For the greater part of the investigation cultures in broth of *Br. abortus* grown for 48 hours and killed by heat were used, but in the last four months suspensions of *Br. abortus* supplied by the M.R.C. Standards Laboratory, Oxford, have been employed. The last five cases were detected with this latter antigen. Readings were made after 2 hours, 4 hours, and 18 hours in the water bath at 55° C. As shown in the Table, the titres obtained with the 28 sera were: in 14 cases, 1 in 2560, the highest dilution tested; in 10 cases, 1 in 1280; in 3 cases, 1 in 640; and in 1 case, 1 in 320. In most instances a definite zone occurred, so that there was no agglutination with the 1 in 40 dilution and only slight agglutination with 1 in 80 dilution. None of the remaining sera showed any agglutination with *Br. abortus* even in the lowest dilution tested.

Attempts were made to isolate the infecting organism by culture from samples of blood received from ten cases. The blood in amounts of 5 to 10 c.cm. was added to 100 c.cm. of broth in flasks, which were incubated in an atmosphere of 10 per cent. carbon dioxide. The majority of these specimens on incubation were found to be contaminated and the others remained sterile. In the last few cases, in addition to culture, inoculation of defibrinated blood was made intramuscularly into guinea-pigs. These animals were killed after four to five weeks and their sera tested for agglutinins against *Br. abortus*. The regional lymph glands and spleen were inoculated into heart broth and incubated for seven days in an atmosphere containing 10 per cent. carbon dioxide. In one case, No. 27 in the Table, the serum of the guinea-pig inoculated with defibrinated blood agglutinated *Br. abortus* in a dilution of 1 in 1280 and the organism was isolated by culture from the lymphatic glands and spleen.

CLINICAL PICTURE AND MODE OF INFECTION

In reply to a questionnaire sent to the physicians in attendance, additional information was obtained on 18 of the cases. The clinical picture varied in detail, but in the majority there was an insidious onset. The patients complained of general malaise, marked lassitude, anorexia, and nausea. Rigors and night sweats were frequent. A temperature fluctuating between 98° and 99° F. in the morning and 101° and 103° F. in the evening was the most characteristic feature, the temperature being greater than the constitutional symptoms suggested. Abdominal discomfort or epigastric pain was noted in six cases, and enlargement of the spleen was present in seven. Slight diarrhœa occurred in four cases, while in five others constipation was marked. The illness lasted several weeks, and in the majority convalescence was prolonged. As shown in the Table, there was a marked preponderance of males in the present series and, as in Prof. Wilson's analysis of collected cases, the majority were adults.

Evidence as to the possible mode of infection is slight. *Br. abortus* was isolated from the glands of guinea-pigs inoculated with two samples of milk supplied to Case 14, one from the home and one from the school. In Case 28, three of four milks submitted for examination by the medical officer of health from the farm supplying the patient agglutinated *Br. abortus* to titres of 1 in 320 and in 640, and from one of the samples the organism was isolated. On the farm where Case 13 lived there had been, immediately before and during the patient's illness, six cases of abortion among the cattle. Four other patients were in the habit of drinking fairly large

quantities of milk, while Case 27 consumed cream daily. The occupation of three, a butcher, a farmer, and a farm labourer, brought them into direct contact with cattle. Of the remaining 17 cases, six lived in agricultural districts or country towns.

TABLE OF CASES

Case No.	Age and sex.	Occupation.	Date of test.	Approx. duration of symptoms before test in weeks.	Titre of serum.
1	40 F.	Housewife.	3/6/29	6	1280
2	60 M.	Not given.	20/7/29	5	2560
3	24 M.	Miner.	1/10/29	2	320
4	20 M.	Butcher and slaughterer.	15/10/29	5–6	1280
5	25 M.	Bank clerk.	19/12/29	4	1280
			30/1/30		1280
6	?	Not given.	26/3/30	2	1280
7	45 M.	Salvation Army officer.	9/6/30	2	2560
8	30 M.	Clerk.	23/7/30	4–5	2560
			14/7/31		2560
9	40 M.	Not given.	7/10/30	3	2560
10	30 M.	Clerk.	31/10/30	7	1280
11	22 M.	Farmer.	9/1/31	3	2560
12	58 M.	Watchmaker.	22/1/31	2–3	2560
13	30 F.	Farmer's wife.	27/2/31	3–4	1280
14	9 M.	Schoolboy.	11/6/31	4	640
15	35 M.	Caretaker.	20/7/31	? 1	2560
16	58 F.	Domestic servant.	7/8/31	6	2560
17	17 M.	Not given.	11/8/31	2	640
			15/8/31		2560
18	42 M.	Paper merchant.	24/11/31	4–5	640
19	48 M.	Pianoforte tuner.	15/1/32	2	2560
20	43 F.	Housewife.	16/2/32	6	640
			23/2/32		1280
21	17 M.	Schoolboy.	12/2/32	4	2560
22	41 M.	Hall porter.	17/3/32	1½	2560
23	37 M.	Fruit and produce merchant.	13/6/32	1	1280
24	20 M.	Farm labourer.	24/6/32	2–3	640
			12/8/32		1280
25	40 M.	Motor-lorry driver.	24/6/32	2–3	3200
26	37 M.	Cotton salesman.	6/7/32	2	1280
27	33 F.	Housewife.	7/8/32	3	2560
28	81 M.	Clergyman.	13/10/32	2½	640

In view of the observations of workers in various parts of the country which indicate that 20 to 40 per cent. of mixed milks may contain living abortus bacilli, the comparatively low incidence of clinical infection in man seems at first sight rather surprising. Evidence has been accumulating lately, however, to show that latent and subclinical infection is probably not uncommon. Facts with regard to the presence of agglutinins for *Br. abortus* in the sera of veterinarians and others whose work brings them into direct contact with cattle have been collected by Wilson [2] and seem to show that latent infection occurs in a fairly high proportion of these individuals and leads to the presence of agglutinins in the serum. P. Dooley,[4] in a recent paper, gives further evidence of subclinical infection. Following on a case of abortion in the herd from which milk was supplied to a school of 232 boys and 31 young adults, two cases of abortus fever occurred among the boys. In subsequent examination of the sera of members of the school it was found that 47 agglutinated *Br. abortus* in a titre of 1 in 80 or over, and 15 in 1 in 320 or over. Of these latter, two were boys who had had definite undulant fever, five had suffered from febrile illnesses of unknown causation, and eight had no illness whatever. These facts suggest that subclinical infection is probably not infrequent, and that the low incidence of clinical infection must depend on the relative insusceptibility of the human population.

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A TREATMENT OF EMPYEMA

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THE injection of serum through the exploring needle has been tried in two cases of empyema with the result in one case of recovery without operation.

A policeman, aged 29, was admitted to hospital under me towards the end of the first week of an influenzal pneumonia. His temperature was 103° F., pulse 110. There was some cyanosis and his general condition was poor. There were physical signs of a left-sided pneumonia with slight fluid at the base. On the day after admission a small amount of cloudy fluid was drawn off, which contained pus and some blood-cells, and gave a growth of streptococci. Four days later, there being signs of more fluid and the temperature remaining 103° at night, 8 oz. of thin pus were withdrawn, and 10 c.cm. of anti-streptococcal serum were injected through the exploring needle into the empyema cavity. Following this the temperature dropped to 102°, and the second night to 100·8°, with considerable improvement in the patient's condition. During the next week the temperature was about 100° at night, but then began rising again to 101°, and signs of fluid returned. Sixteen days after the serum had been inserted an aspiration drew off 10 oz. of pus, and another 10 c.cm. of antistreptococcic serum were injected through the needle. After this there was no return of fluid, and the man made a rather slow recovery but left the hospital quite fit.

A case of pneumococcal empyema was later admitted under me. The empyema was a very large one, three pints of pus being withdrawn on the day after admission; 10 c.cm. of Pane's antipneumococcal serum were injected into this on several occasions after aspiration, and also Felton's serum, but they were ineffective, and the empyema had to be drained surgically.

The cure without operation in the first case makes the treatment worth trying in streptococcal cases. If a pneumococcal empyema were aspirated soon after its start, while still small, it is possible that antipneumococcal serum might be more successful.

FOOD POISONING AT DARTMOUTH.—More than a hundred cases of acute gastro-enteritis occurring recently in the neighbourhood of Dartmouth were attributed by the medical officer of health, Dr. MAX F. TYLOR, to bacterial infection. It seems that they all followed closely on the consumption of some kind of "black pudding," of which the sale was promptly stopped. The acute cases were among those who had eaten the viand in the form purchased; those who recooked it on the following day had only mild attacks. No fatal cases have as yet been reported.

CHEYNE HOSPITAL FOR CHILDREN.—The report for 1932 expresses regret that the use of the private wards (£3 3*s.* to £5 5*s.* weekly, plus the doctor's fee) has not so far justified the considerable expense of providing it: the committee suggest that insufficient publicity may be the cause. There were 135 new patients in the main hospital and 28 in the St. Nicholas branch hospital. Work was considerably hampered for some time by the continued prevalence of a mild form of diphtheria, 17 cases occurring, and special steps had to be taken to eradicate the epidemic. The work of the massage department continues to increase—5570 treatments were given, an increase of 15 per cent. The average weekly cost per patient fell from £2 9*s.* 1*d.* to £2 5*s.* 5*d.* The income was increased by £211.

MEDICAL SOCIETIES

THE ROYAL SOCIETY

EXPERIMENTAL PRODUCTION OF MALIGNANT TUMOURS

AT a meeting of the Royal Society held on June 15th, with Sir GOWLAND HOPKINS, the president, in the chair, Dr. J. A. MURRAY opened a discussion in a survey which was published in our issue of last week.

The Chemistry of Carcinogenic Agents

Dr. J. W. COOK then spoke of the production of cancer by pure chemical compounds. He agreed with Dr. Murray that the results offered no explanation of the mechanism of tumour production. Chronic irritation was an unsuitable term for the effects of carcinogenic agents on the skin. Many irritating constituents of coal-tar had no effect at all in a carcinogenic application. The essential chemical feature of carcinogenic agents was a carbon ring structure consisting of four or five aromatic rings. Compounds varied greatly in carcinogenic potency, and the differentiations were not entirely due to solubility variations. The most powerful was benzpyrene. The parent substance was benzanthracene, which had little cancer-producing power, though additions to its molecule produced many carcinogenic hydrocarbons. Negative results were obtained with 15 other derivatives and all except two of the hydrocarbons having five benzene rings. Cancer production, therefore, seemed to depend on a particular type of molecular arrangement. Subcutaneous tumours had also been obtained by injection of these substances, and one mouse tumour had reached its sixty-seventh generation. Dibenzanthracene tumours had also been obtained in fowls. A number of naturally occurring substances contained the essential molecular arrangement—e.g., vitamin D, the cardiac poisons, and the ovarian hormone. In the carcinogenic hydrocarbons all the rings were aromatic. The process of breakdown of cholesterin into the female hormone involved aromatisation of one ring, and an extension of the process to cancer-producing substances could easily be imagined. A correlation between carcinogenic and œstrogenic compounds had been shown in the 1, 2, 5, 6 dibenzanthracene ring system. Even more suggestive was the conversion of bile-acid substances into hydrocarbons of the benzanthracene group. The fate of the stearols and bile acids in the body might prove of great importance.

The Problems of Carcinogenesis

Dr. W. CRAMER said that the normal cell was always subject to stimuli from without. Malignancy was the negation of the integration between stimulus and reaction. From this derived the transplantability of malignant tissue; the malignant cell dominated the connective tissue reaction and so was able to establish itself. In the rare cases of spontaneous regression and under the influence of radium the connective tissue regained its dominance. The change was due to something within the cell which could not be separated from it. Transplantation was simply tissue culture in vivo. The change was probably in the nucleus. Carcinogenesis presented two problems: the nature of the change and the manner in which it was induced; the latter was practically solved, but the former was still quite unknown. The agents which produced cancer in man produced it in experimental animals, and, measured in biological time, the period required was much the same. The long period required for carcinogenesis explained the age-incidence of cancer; it was more difficult to produce in the aged than in the young, and the age-incidence was not, therefore, due to any change in the host. The development of malignancy was undoubtedly influenced by susceptibility, probably inherited, in the host. The change known as chronic irritation might act by inducing the cells themselves to produce carcinogenic agents.

Carcinogenesis by cell-free extracts was immediate and specific, thus differing from the other form of transmission. Moreover it could give rise to antibodies and, so far, was limited to fowls and to growths of mesoblastic origin. It had never been conclusively demonstrated in mammals. Experimentally it behaved like a virus and was more easily effected in young than aged birds, although spontaneous tumours were commoner in the old bird and behaved like mammalian cancer. The factor probably had a complex form, one part being of fowl origin and the other a virus. There was an apparent contradiction between fowl and mammalian tumours, and this contradiction had not yet been resolved. Those who so confidently denied the possibility of a virus took a narrow view. Normal animal cells might contain non-pathogenic viruses capable of transformation into pathogenic viruses in certain circumstances, just as bacteria might change their character. An injection of fowl-virus into the blood stream had no effect, but if a hæmorrhage followed, a tumour would develop at its site.

A better explanation than either mutation or virus was the metabolic change in malignant cells which rendered them less dependent on oxygen than normal cells. The oxygen supply was probably one of the devices whereby tissue control was integrated. The solution of the ultimate cause might not improve diagnosis or treatment, and the difficulties of explanation had tended to obscure the great advances that had been made. There was no greater mystery in cancer than in any other disease of cell life. It began as a local disease and in that stage could be cured and was being cured in a great majority of cases. If there were extraneous factors it must be possible to avoid them if they were known, and then cancer would be a preventable disease.

Filtrable Fowl Tumours

Dr. C. H. ANDREWES said that filtrable fowl tumours formed a valuable line of attack on cancer as a whole; it was not possible to regard them as quite different from mammalian or other fowl tumours. All fowl tumours sooner or later proved to be filtrable. The filtrable agents could be neutralised by specific antibodies from tumour-bearing or immunised birds. Serological studies had thrown interesting light on the problem. The agents behaved in most respects like viruses, but one tumour appeared in a flock while no others were found, or others of quite a different type appeared. Serologists could point out that the body did not produce both an agent and an antibody to it. Moreover, the antibodies behaved just like other virus antibodies. Serologically, therefore, the agents seemed to be actually viruses and not something produced by the host. The necessary postulation of multiple viruses was a difficulty. This problem could be studied from the serological

point of view, but the answer was indefinite. In fowls all the viruses seemed to be the same, but pheasant sera were much more specific. Bacteria also had specific and group antibodies. The virus antibodies were neither identical nor entirely distinct and either finding might be stressed in building a theory. Goats could yield antifowl antibodies, and these neutralised fowl tumour extracts but were heat-labile. This seemed a strong argument for the fowl origin of the filtrable agent, but further observations showed that the characteristic might not be permanent. The association between the virus and the protein was probably closer than in any other virus, and might determine the specificity. The viruses which caused tumours were not to be distinguished from those causing infections.

FOWL TUMOURS FROM TAR PRODUCTS

Dr. P. R. PEACOCK said that the relationship between avian and mammalian tumours must be solved before speculations as to the cause of tumours were profitable. An interesting method of study was the application of carcinogenic agents to fowls. There was no difficulty in producing fowl tumours by tar products. One such tumour had been propagated through 11 generations without ever becoming filtrable. Dr. Peacock gave an account of his experiments in this connexion. In 139 birds he had succeeded in producing 32 tumours, 14 of which metastasised widely. A number of the growths had proved transplantable by an injection of finely ground suspensions—not guaranteed cell-free, but such as would not usually reproduce a mammalian tumour. None, however, had become filtrable yet. The growths were exactly comparable with mammalian growths and paralleled the spontaneous fowl tumours which had eventually become filtrable.

Prof. J. MCINTOSH confirmed the importance of Dr. Peacock's investigations and described facts which had come to light in the course of his work along these lines. Some 30 different kinds of Rous tumour had been obtained and their pleomorphism needed explanation, as did their relationship with mammalian tumours. He had injected normal and Rous-immune fowls with tar in lard; some had survived for a year. Tumours had been found in just over 50 per cent. of the birds injected. The breast muscle injected did not always bear a tumour, but showed local cell reaction in addition to the marked cell proliferation always found in some other organ. The tumours might resemble the Rous sarcoma or be fibro-endotheliomatous, leucoblastic, or angeio-endotheliomatous. Some birds showed leukæmia after tarring. The Rous-immune birds never developed a Rous tumour, but showed fibro- or angeio-endotheliomatous growths and leukæmia. One tumour had been transmitted for six or eight passages and others for less; the older one was filtrable and corresponded with the Rous type. A spontaneous tumour had never been found in the 5000 birds used; the tar must act as a carcinogenic agent. The extraordinary pleomorphism had been found associated with a leukæmic virus. These results indicated a number of possible explanations. The filtrable leukæmia along with a filtrable Rous type of tumour in tar-treated birds might be explained as the result of tar stimulation activating the tissues, which were then acted on by a virus widely distributed in the fowl world. The second explanation was a pleomorphism in the virus, which could have an affinity with any mesoblastic tissue. The third and perhaps the simplest was the acceptance of some form of specific factor in addition to a virus, determining which cell should be attacked. Much ground had yet to be covered before the relationship between fowl and mammalian tumours would be cleared up.

Dr. W. E. GYE said he had found no cross-relationship between leukæmia and tumours. One of the puzzles of the cancer problem was the remarkable variation in the rate of growth of apparently similar tumours. The slow-growing tumours contained an inhibitory factor, which had been demonstrated by J. B. Murphy. There was a quantitative relationship between the rate of growth and the inhibitory factor. The rate of progress in this work depended on looking inside a cell rather than at its morphology.

Conclusion

Prof. A. E. BOYCOTT did not think Dr. Murray's three hypotheses were alternative. A gene mutation might explain why a cancer cell was different from a normal cell, but could not explain the cause of cancer. The growth of a cancer cell was different from that of normal cells, but it had its own code of growth and histology and stuck to it for ever and ever. Surely its cells must differ genetically from those of the host. The gene mutation theory was the most useful explanation of this fact. The two other hypotheses might be made two stages of the same hypothesis to explain the production of this change. A great variety of physical and chemical agents had carcinogenic power. The problem was: did they act on normal cells directly or did they all cause the production of some carcinogenic agent in the tissues? There was very little convincing evidence for an extraneous virus. Fowls never caught tumours from one another, and a virus that stood all the knocking about that this agent could stand must be a remarkable one. The antigenic argument could be carried too far. Protein compounds were antigenically different from the original protein. If "normal" viruses occurred in "normal" cells they were perhaps better called by some other name than "virus."

ROYAL SOCIETY OF MEDICINE

SECTION OF OBSTETRICS AND GYNÆCOLOGY

AT a meeting of this section on June 16th, with Mr. J. P. HEDLEY, the president, in the chair, a discussion took place on

Uterine Inertia

Mr. A. C. H. BELL, speaking of inertia in the first stage of labour, said that its scientific treatment could not be established on a sure footing until its cause was known. Among the predisposing causes given in text-books were overdistension of the uterus in association with weak pains, premature rupture of membranes, and malpresentations such as the persistent occipito-posterior. In regard to this last, non-rotation of the occiput was probably a result of the inertia, not the cause of it. The part played by hormones was uncertain, though it was known that extract of posterior pituitary lobe stimulated contraction of uterine muscle. Possibly fear, resulting in the liberation of adrenaline, might inhibit uterine contraction. There was little evidence to support the idea that fibrosis was a cause of rigid cervix. The clinical evidence was strong that inertia usually occurred in women undergoing their first confinement, especially those who were nervous. He had recently collected the available facts concerning 49 cases of severe inertia which occurred among 4500 consecutive

deliveries, and his conclusion was that any type of woman might suffer from this complication. The kind which was accompanied by rigidity of the cervix was most dangerous to mother and child, and the most difficult to treat.

Two types of inertia could be considered: the mild, with ineffectual, colicky, and painful uterine contractions, though the cervix was soft and yielding; and the severe, in which the cervix was thick and rigid. Delay due to the latter condition must not be confused with delay due to malpresentation or contracted pelvis; uterine inertia did not necessarily imply absence of pains, and it was only by the correct interpretation of vaginal examinations that the diagnosis could be made.

Present knowledge did not make possible a prediction of inertia. By way of prevention, however, much could be done by allaying the fear of labour, and by giving calcium during the later weeks of the pregnancy. Treatment of mild inertia should be expectant, combined with sedatives and the administration of pituitary extract. In this mild type active interference, especially by using bags, was to be condemned. If activity seemed to be indicated, it should be in the interest of the child. Where there were twins and no pains followed the birth of the first child, the membranes should be ruptured and the second child should be delivered artificially after giving the mother pituitary extract. Severe inertia, with a thick and rigid cervix, was a serious complication for both mother and child. If the membranes were unruptured and the mother's condition was good, the child being alive, Cæsarean section should be seriously considered. If delivery by the natural passages was decided upon, expectant treatment should be continued as long as possible, careful watch being maintained on the mother's condition. If the child was dead, there was always infection after the patient had been many days in labour, and the practice of incising the cervix was to be condemned, because of the risk of spreading sepsis. In the 49 cases referred to, the fœtal mortality was 40 per cent., the maternal mortality 10 per cent. The exhausting effect of repeated examinations and meddlesome midwifery could not be overstressed.

Mr. C. M. MARSHALL also dealt with the first stage. Inertia was diagnosed, he said, by the quality and frequency of the pains; mere prolongation of the first stage did not necessarily mean inertia. Some of these patients had an abnormally low blood pressure, but the same reading was found in many primigravidæ whose labours were normal. Of the cases he had seen about a third were in primigravidæ who showed some cephalopelvic disproportion, another third were associated with posterior presentation of the occiput, and the remainder included multiple pregnancy, hydramnios, and nervous primigravidæ. Many multigravidæ with inertia gave a history of similar trouble in previous pregnancies. First-stage inertia in a breech presentation in a primigravida was very rare. He felt that inertia of the upper contractile segment of the uterus was often due to inadequate stimulation of the lower passive segment and to lack of uniform contact pressure with the cervix. This upset the normal polarity between fundus and cervix. Inertia was not so common in cases in which membranes did not rupture prematurely; in the treatment of certain types of placenta prævia, simple rupture of the membranes sufficed, but the presenting part was rarely fixed. The contrast was seen when Willett's forceps were applied and weight traction was used; the head was drawn down, pains usually began immediately, and the first stage was normal. Fear and anxiety might have a powerful inhibitory action on the force and frequency of the pains, and often seemed, indeed, to be the sole cause of inertia. But these emotions might only appear after irregular and very painful contractions of the uterus. Actual fatigue of the uterine muscle did not seem to occur, the inertia was rather a matter of derangement of the mechanisms controlling it. Even when inertia seemed complete, the muscle was still capable of irritation and responded readily to pituitary extract, and occasionally to quinine, while it always responded to the presence of a hand in the uterus.

The student should be taught to regard every case as potentially serious. It could be shown that in 90 per cent. of cases there was no associated disproportion, and there was a happy outcome, but in the remaining 10 per cent. the results might be serious. A careful abdominal and rectal examination should always be made, but repeated vaginal examinations should be avoided. When no other complication was present only sedative treatment was required, and morphia was still the best drug available. Usually attempts to improve contractions by means of drugs were unsatisfactory. Pituitary extract he regarded as dangerous, and quinine as uncertain. He had not seen a case in which inertia was the sole indication for Cæsarean section. The question of anæsthesia for any procedure during inertia was important. Chloroform was dangerous because of the third-stage complications following its use, but spinal anæsthesia was almost ideal for the purpose.

Mr. R. G. MALIPHANT (Cardiff) said that what was really at fault in these cases was the stimulating mechanism. The initiation and continuance of uterine activity seemed to be influenced, and to some extent controlled, by two main groups of stimuli: hormonal and psychic. The first, which was evolutionary, was the more important, yet it was not known how it worked. In primitive women and in animals the hormones probably controlled parturition without extraneous interference, but with the evolution of a more highly specialised nervous system the mind had now acquired a definite influence over uterine activity, and this was productive of no good; it was the placid woman who had the easy confinement, and the publicity given in the lay press to the dangers and mortality of childbirth tended to reduce the proportion of these. Hence it was a very important task of the obstetrician in the antenatal period to earn the prospective mother's confidence, and help her to a healthy frame of mind concerning the approaching event. Uterine efficiency was a matter of degree; there was no sharp dividing line between normal and abnormal uterine contraction, and in a case of uterine sluggishness it was wise to consider whether an attempt should be made to hasten a chain of events which were still imperfectly understood. The best results were obtained when the obstetric complication was neglected as far as possible, attention being mainly concentrated on the individual. By regular nourishment and periods of rest the patient should be made as fit as possible to bear her ordeal. It was claimed by some that glucose given in ½ oz. doses improved the quality of the contractions and combated the tendency to acidosis which was commonly seen in cases of slow labour. When the uterine inertia was associated with premature rupture of the bag of waters—which was seen in 7 per cent. of cases delivered at Cardiff Royal Infirmary—it sometimes seemed that the cause was the lack of engagement of the presenting part. There were four complications for which the obstetrician must be prepared: undue

compression of the child, œdema of the cervix, ascending uterine infection, and maternal exhaustion. Yet it could be said that active interference was rarely required, even at this stage, for with sedative treatment the os would often dilate of its own volition, and the dilatation would be followed either by spontaneous delivery or by low forceps extraction. Though patience was necessary, it must not be of the kind which allowed the child to die of compression. Any treatment must be conservative, and such shock-producing manipulations as rapid dilatation of the cervix must be avoided.

Two classes of case might call for special treatment. In the first, the head was high, the liquor was trickling away, and there was doubt about the posterior position of the occiput. No time should therefore be lost in giving an anæsthetic and examining the presenting part with the whole hand. When the occiput was rotated forwards, the head usually sank on the cervix, where it stimulated uterine action and prevented further loss of liquor. The other kind of case was the neglected one; the woman had perhaps been in labour with ruptured membranes several days, yet the os was not half-dilated. The patient was exhausted, and very sensitive to manipulations causing shock. Probably the child was dead, and the delivery must not be rapid; it must be in the form which caused least shock. Fortunately, operative procedures were seldom required.

Mr. R. NEWTON spoke of the results of an investigation of 500 cases of delayed labour treated at St. Mary's Hospital, Manchester. For efficient action of the uterine musculature, he said, there must be sufficient calcium in the circulating blood, also sufficient pressor substances; likewise there must be a properly developed neuromuscular mechanism which was capable of normal action. This mechanism could be influenced by such factors as a full bladder, a full rectum, or pressure on the lower uterine pole. The mental state of the patient was also very important. It was taught in Manchester that before a woman entered into labour it was possible to obtain some idea of the activity of the uterine muscle. There were great differences in the reaction of the uterus to palpation; when the tone was poor and was little altered by palpation of the uterus, the uterus was sluggish, though he had not personally confirmed the relation of this to the length of the labour. When the uterus was found to be sluggish in the later weeks of pregnancy, medicinal induction of labour at term was advised. The judicious use of sedatives for nervous primiparæ would save many prolonged labours, and the use of morphia in the first stage was strongly advised. Of uterine stimulants, quinine was probably the best. If pituitrin was used, it should be only in small doses. Ovarian Residue he had seldom found of use, but after using it there was little pain in the contractions. In a small proportion of cases mechanical interference was necessary. It was important to decide how long a patient with uterine inertia should be left in labour; he thought three days should be regarded as the limit; after that time he terminated it by trachelotomy and forceps delivery, usually without the prior use of a mechanical dilator. If the latter was used, his preference was for a Gerrard's cup dilator, because it did not displace the presenting part nor injure it, and considerable traction could be applied reasonably to it.

Of 500 cases in which labour lasted longer than 36 hours 147 were absolutely uncomplicated cases of delay. A sedative was given, and in many quinine was used as a stimulant; resort to mechanical interference was never necessary in the first stage. There were no maternal deaths, there were 3 stillborn children. In 63 cases early rupture of the membranes was the only complication; in 6 it was necessary to incise or dilate the cervix. In 39 cases an occipito-posterior position was the only complication; in 2 artificial dilatation of the cervix was necessary; there were no maternal deaths, the stillborn children numbered 3. In 29 cases early rupture of the membranes was associated with an occipito-posterior presentation; in 2 cases artificial dilatation of the cervix was necessary.

THE SECOND STAGE

Mr. A. J. WRIGLEY explained that uterine exhaustion secondary to mechanical obstruction was excluded from the discussion; this was concerned with the woman whose labour had progressed successfully to the stage when the head of the normal infant had passed through the cervix and the cavity of the normal pelvis, had reached the pelvic floor, and distended the perineum with each contraction. Often when this stage was reached, the pains decreased. Thus, in 80 per cent. of the last 140 cases of forceps delivery at his hospital, the fœtal head was on the pelvic floor before application, though the forceps rate there was under 3 per cent. The greatest use of the forceps should be to gently assist delivery through the pelvic floor and vaginal outlet. It was taught that nothing at this stage should be done unless there were signs of "maternal distress" or fœtal distress, or unless progress was unduly delayed. Very few would advocate at this stage the use of the dangerous drug, posterior pituitary extract. His experience was that in these circumstances inhalation of the smallest quantities of chloroform was followed by even weaker and less frequent contractions, meaning a longer wait for all concerned. For most of these women, in general practice, labour was completed with forceps. It was only a matter of lifting the head over the perineum, and most medical men and women took the law into their own hands. The instrument used by most doctors in practice and by teaching hospitals was the long curved forceps, with some axis-traction modification; it was of considerable weight and bulk, and allowed of the exertion of much force. It therefore often caused much damage to both mother and child. The speaker considered that the day of this cumbrous instrument was now over; it should be replaced by a smaller and lighter instrument, which could be applied with greater ease and safety. In place of one of 2 lb. in weight, the one he showed weighed 11 oz.

THE THIRD STAGE

Miss BEATRICE TURNER explained the method used in the obstetric unit of the Royal Free Hospital in dealing with the third stage. No drugs, such as pituitrin or ergot, were ever given before the placenta had been expelled. She was not considering cases of morbidly adherent placenta, of partially adherent placenta, or of contraction ring, for these were pathological conditions of uterus or placenta, though they might prolong the third stage. In 100 unselected cases delivered during 1920, the average length of the third stage was 8¼ minutes; in a series in the present year it was 12¾ minutes. The criterion she had taken as indicating inertia in the third stage was the time taken before the expulsion of the placenta. The parity of the patient did not seem to have much influence, except that the multipara usually had a more rapid labour throughout each stage. In a series of 400 labour cases she had analysed, 57 per cent. of the primiparæ had a long third stage, 43 per cent.

a short third stage. Abnormalities, such as twins, hydramnios, or breech presentations, seemed to have but little influence; but the occipito-posterior position made a considerable difference in the character of the third stage. The use of forceps was associated with inertia in the third stage. This might be due to the long labour which was such a frequent precursor of forceps delivery or to the fairly deep anæsthesia necessary for the application of the forceps. In her series, inertia was present in 65 per cent. of cases in which forceps were used, while only 35 per cent. of them were normal. Analgesic drugs given in the first stage seemed to have little effect on the third stage; but the anæsthetic used for the second stage of labour had some bearing on the problem. Gas-and-oxygen seemed to improve the tone of the uterine muscle and to hasten the delivery of the placenta. In this series 25 per cent. of all cases having gas-and-oxygen only had a long third stage, whilst 75 per cent. had a normal third stage. But if chloroform were added to the gas-and-oxygen mixture, the picture changed, and it was found that 58 per cent. of patients who had that mixture had inertia, 42 per cent. having a normal time. Seldom was either ether or chloroform used alone. Uterine inertia in the third stage should be treated as little as possible; pituitrin and ergot were never used in her department during the third stage, and but seldom in the second stage, for there was always the danger of a contraction ring and severe hæmorrhage. The post-partum hæmorrhages in the unit were only 0·005 per cent. of the total deliveries.

DISCUSSION

Mr. J. M. WYATT said he was not sure that enough stress had been laid on the importance of the patient having sufficient sleep while the membranes remained unruptured; if necessary, sedatives should be given each eight or ten hours. There was more risk both to mother and child with ruptured membranes. He did not understand the reason for the statement that if the child's head was high it prevented uterine contraction; for in that case every multipara should have a very long labour. He advised giving 5 units of pituitrin as the head was being born; it shortened this stage, and but little blood was lost.

Mr. L. CARNAC RIVETT confessed that he did not yet know what was the best thing to do for uterine inertia. Whiffs of chloroform were a useful analgesic in normal labour, but in primary inertia this means of relief was contra-indicated. It would not increase the pains, and it might seriously diminish them.

Dr. J. S. FAIRBAIRN said that the subject of uterine inertia had never been thoroughly tackled, the chief reason being that the application of forceps provided an easy way out.

Mr. GORDON LUKER laid stress on the importance of medication before labour, especially the administration of calcium for three months preceding delivery; in the last three weeks quinine should be given. He advocated castor oil enemata and a small dose of quinine on the day that labour began. Many cases of uterine inertia had not had these attentions.

Mr. W. C. W. NIXON said that in the last two years he had examined the cervix of every woman who died at his hospital, including women of all ages, and had been unable to find a single case with a semblance of a sphincter in the region of the external os; hence he did not understand the term "fibrosis of the os" which occurred in the text-books.

In reply Mr. BELL said he adhered to his statement that pituitary extract did no harm, given in doses of 0·5 c.cm.—Mr. MARSHALL maintained that premature rupture of membranes did not increase the morbidity of Cæsarean sections.—Mr. MALIPHANT said he had not time to stress the influence of the hereditary factor in long labour; there were families deeply conscious of the length of the ordeal awaiting their women folk when they married.—Mr. NEWTON said that the question of the early rupture of the membranes and its significance had not been assessed at its due importance.—Mr. WRIGLEY said that in using the light forceps he had shown all he did was to prevent the head receding when the uterus pushed it down.

REVIEWS AND NOTICES OF BOOKS

Psychology of Sex

By HAVELOCK ELLIS. London: William Heinemann, Ltd. 1933. Pp. 322. 12*s.* 6*d.*

IN the course of the last five years there has appeared an increasing number of books by writers, often unqualified for the task, on the many aspects of the psychology of sex. Several of these books have been translated into English from foreign languages. Almost without exception their authors draw for their material upon the works of Mr. Havelock Ellis, whose exhaustive writings have appeared in too compendious a form for ready assimilation by the medical student or the instructed lay reader. The appearance of this volume is therefore in the highest degree opportune. "Ordinary medical practitioners and students," writes the author, "are far too overburdened already to be able to master extensive treatises on an additional subject which is not obligatory. The subject of sex in its psychic and social bearings is so central and of an importance now so widely recognised, if not indeed exaggerated among the general public, that the medical man of to-day cannot fail to have it brought before him. He cannot, like his predecessors, conventionally ignore its existence or feel that its recognition would be resented as impertinent or indecorous. Moreover, a knowledge confined to general anatomy, physiology, and pathology is now altogether inadequate."

Mr. Havelock Ellis's book meets the need here described better than any other book in existence. It contains seven essential chapters upon the biology of sex, the sexual impulse in youth, sexual deviation, the erotic symbolisms, homosexuality, marriage, the art of love. The separate chapters are divided into sections at the end of which the author has included a short bibliography of the most helpful literature in the English language. Throughout the book evidence will be found of that remarkable erudition which has astonished so many of those familiar with Mr. Ellis's other works. Yet the reader is never oppressed by it, for the author has marshalled and focused his knowledge upon the primary purpose of clarifying the objective grounds on which the several standpoints of the book are based. In the sphere of sex these opinions and impressions, even when formulated by experienced medical men, are too often misleading, since in nearly all cases they can be countered by impressions of an opposite kind, formed by equally experienced observers. Hence the need for objectivity is here especially great.

The numerous books which have appeared on this subject are mostly open to criticism on various

grounds: if written by timid but well-meaning persons, slightly nervous of their reputations, they are overladen with apologies for dealing with the topic of sex at all, and much space is devoted to begging the reader to purge himself of prejudice; if written with the object of amusing and mildly shocking the reader, they may abound in dubious anecdotes and advocate ultra-modern views on sexual reform; if written by religious persons the argument may be conducted in semi-theological language, which the medical reader does not always find helpful; or if the rôle of mentor be assumed to a young and innocent reader, the tone of the book may be patronising or heavily loaded with adjectives. Mr. Ellis's book has none of these defects. His approach is fearless and direct; yet he never gives offence. Nowhere does he apologise for what he says or for the carefully chosen terms he uses. Never is his subject presented otherwise than as one of deep, scientific, and human interest. He is, in the fullest degree, conscious of the far-reaching implications in the spheres of art, religion, and morals, of the instinct whose endless permutations and aspects he is describing; yet he never preaches to us, and rarely is the reader asked to accept a judgment which is not inductively substantiated. The book is written in that easy and graceful style which characterises Mr. Havelock Ellis's other works. In the measure that the importance of human sexuality is realised by medical teachers, a demand will arise for a manual on the subject for students. This book will fulfil the need.

Essentials of Medical Electricity

Seventh edition. By ELKIN P. CUMBERBATCH, M.A., B.M. Oxf., D.M.R.E. Camb., M.R.C.P., Medical Officer in Charge, Electrical Department, St. Bartholomew's Hospital. London: Henry Kimpton. Pp. 508. 10*s*. 6*d*.

IN this new edition of Dr. Cumberbatch's comprehensive book he has added six chapters to the original one on high frequency and diathermy. In an introductory chapter he suggests that the expression "treatment by high frequency" should be discarded; that the term "high frequency" should be used only as a family name for the currents which alternate with sufficient frequency to prevent electrical stimulation of excitable tissue; and that the term electro-thermic methods of medicine and surgery should be used for the various ways of using these currents. He discusses medical and surgical diathermy in all its aspects, with an especially interesting account of the methods of producing therapeutic pyrexia by means of the diathermy current or short Hertzian waves, the latter being still in an experimental stage. The simplicity of the technique shows that it could become a valuable therapeutic asset. For example, the electrodes can be placed in contact with the patients' clothes and, if he is in bed, can be adjusted on either side of the trunk with no fear of burning the skin should he move. It must be realised, however, that a special generator is required, and that therapeutic pyrexia can be obtained by much less elaborate means. A useful time- and labour-saving device is described—the method of applying treatment by diathermy at the same time as by the galvanic, faradic, or sinusoidal current through the same electrodes. Many new illustrations have been added as well as a complete set of plates showing the position of the motor points and the muscles which they represent. The book gives a well-proportioned and careful consideration of all types of electrical current and of the conditions for which they are used.

A Surgeon's Pocket Book

By H. S. SOUTTAR, D.M., M.Ch. Oxf., F.R.C.S. Eng., Surgeon to the London Hospital. London: William Heinemann, Ltd. 1933. Pp. 285. 7*s*. 6*d*.

Mr. Souttar's pocket book is meant for use as a revision manual in association with his larger surgery, which has gained deserved popularity among students. It really is a book suitable for the pocket, for its pages measure only about 4 by 6 in., and it is scarcely more than half an inch thick. A heavy price has been paid for this convenience, because the condensation of matter is so extreme that unless he has an exceptionally good memory a student revising his work is likely to be misled. For example, since fixation of the spine by Albee's operation is mentioned without any qualification in connexion with spinal caries, a student might well deduce that it is the ordinary treatment for all cases. Reference to pathological conditions by names which give no indication of the nature of the lesion certainly economises space, but has little revision value; thus under the signs of fracture of the cervical spine on page 132, the term Horner's syndrome, without any explanation of what it is, may convey little. On page 267 Mr. Souttar says that for the enlarged prostate "suprapubic cystotomy is the treatment of choice," though it is clear from the text that he means suprapubic prostatectomy. Doubtless many students can learn or relearn their work from such brief notes, supplemented by reference to a parent volume. If they really carry a little book about with them and consult it often they can hardly fail to become familiar with the essential principles of surgery.

Whitla's Pharmacy, Materia Medica, and Therapeutics

Twelfth edition. Revised by J. A. GUNN, M.A., M.D., D.Sc., F.R.C.P., Professor of Pharmacology in the University of Oxford. Assisted by H. BERRY, B.Sc., Ph.C., A.I.C., Head of the Department of Pharmacy, Birmingham Central Technical College; and J. CLIFFORD HOYLE, M.D., M.R.C.P., Medical First Assistant and Demonstrator in Pharmacology, London Hospital. London: Baillière, Tindall and Cox. 1933. Pp. 645. 12*s*. 6*d*.

THIS book, first published in 1881, has for more than half a century and through many editions held its position as one of the best text-books on the subject for students of medicine. During this long period Sir William Whitla has continued himself to revise each new edition, and has only now relinquished the task to Prof. Gunn. The new editor, while he has been compelled by the publication of the British Pharmacopœia 1932 to make extensive alterations in the text, has wisely preserved the original plan and scope of the work. Sir William Whitla believed that pharmacy was one of the most important sections of materia medica, and for that reason included an admirable and comprehensive outline of it in the first part of his book. This section, with the parts dealing with the materia medica of the B.P., has been revised by Mr. H. Berry. The student of medicine may feel that these sections contain too much information for his needs, but he should make himself familiar

at least with the principles, if not with the details, of the preparation of remedial agents. The main part of the work deals with the therapeutic uses of official drugs, arranged in alphabetical order. Here Sir William Whitla's vast clinical experience was of the greatest value, and most of his observations, some of which are of first-rate importance, have been retained. A new feature, which the practitioner should find of value, is a section by Dr. J. C. Hoyle on non-official remedies, containing a short and, in some instances, a critical description of the action and uses of drugs such as Nembutal, Percaine, Pyridium, and others, which are frequently the subject of reference in the current literature of medicine.

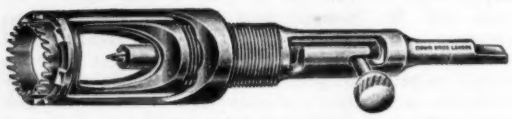
THE English agents for the book on "Homogeneous X Radiation and Living Tissues," by Dr. Warneford Moppett, reviewed in THE LANCET last week, are Messrs. H. K. Lewis and Co., Ltd., from whom copies may be obtained.

NEW INVENTIONS

A NEW TREPHINE

A TREPHINE that will open the skull quickly and easily, that will indicate the very moment it is through the bone, that will not plunge when it does get through, and that can be readily carried and manipulated by any surgeon in any place, should have distinct advantage over other methods of opening the skull, be they by trephine, burr, or electrical equipment. The following trephine appears to us to fulfil the above conditions, while it almost rivals the speed of the electrically propelled instrument.

Description.—The tool consists of three parts, the trephine proper with hollow shaft, a self-adjusting guard, and a bolt for starting. The trephine proper



has two large lateral windows for viewing the small disc of bone that is to be removed. The taper of the teeth has been specially considered to ensure rapid cutting. Just above the trephine the outside of the shaft is fitted with a fine thread to take the guard. The inside of the shaft is hollowed out to receive the bolt. The upper end of the shaft is of standard design to fit the brace.[1] The bolt slides in the shaft like a rifle-bolt, and has a handle which can fit into either of two slots—one for projection, one for withdrawal. Behind the point is a safety shoulder. The guard also with lateral windows moves up and down on the screw-threaded shaft. It has small "grips" on its skull face.

Use.—The guard is screwed down to the bottom of the thread, bringing the grips to within a sixteenth of an inch of the teeth, the bolt or centre pin is protruded, and the trephining commenced. After a few turns to ensure the grooving of the skull by the trephine, without disturbing the teeth in the groove, the bolt is withdrawn. The trephining is boldly continued while the grips of the guard press on the skull. The guard, automatically rising relative to the teeth, prevents any possibility of plunging, and maintains a vertical position of the drill, thus avoiding "rocking." The moment cutting is complete the *central button of bone is seen to spin round*, thus clearly indicating that the trephining is finished. Even if several extra turns are made, the trephine can only enter the skull by screwing through the guard, and owing to the fine pitch of the thread the distance cannot be great. The finely threaded guard also prevents any "plunging," and creates a steady and very readily perceptible transmission from obvious "cutting" to "turning in space."

During the evolution of the apparatus we carried out a number of experiments to ascertain what would happen should the operator continue his trephining after the rotating piece of bone had visibly shown that the penetration of the skull had been effected. Work on a large number of dissecting-room bodies showed that even when the skull was penetrated to a further depth of half to three-quarters of an inch the dura was very rarely damaged. The simplicity of seeing when the skull is trephined, and fortified with the safety action of the guard, makes such a penetration extremely unlikely in any circumstances. We have had no hesitation in discarding an earlier additional "check" guard which was set, prior to the trephining, at a known distance from the teeth, so that when this distance had been sunk in the skull, the first guard would bump up against the additional guard, thus "locking" further movement.

Having cut out the button the surgeon withdraws the trephine, and snapping down the bolt not only reprojects the point for a second trephine but shoots out the neatly cut button into a sterile basin for replacement, at the end of the operation, into the original hole which it very closely fits. Thus the trephine more than meets the desire of the osteoplastic flap replacement, for every piece of bone can be refitted with remarkable ease. If the inter-trephine connecting incisions are made with a Gigli saw it is obvious that the whole set of tools take up a very small space, and can be easily carried to any operating site.

Messrs. Down Bros., of St. Thomas's-street, London, S.E., have the technical details required for the construction of the instrument and for the various sizes to meet individual taste.

Thanks are due to Mr. R. P. Rowlands, senior surgeon to Guy's, Mr. Lancelot Bromley, neuro-surgeon to the hospital, and Mr. W. H. Ogilvie, who has had much experience in designing instruments to meet the special problems of bone-cutting. They have very kindly tried the instrument during its conception, and allow us to say that they are satisfied with its ease of working and simplicity. We are indebted also to Mr. A. B. Wayte for help and criticism.

A. SIMPSON-SMITH, M.Chir. Camb., F.R.C.S. Eng.
Guy's Hospital. T. H. HILLS.

[1] For steadiness, speed, and easy working, Souttar's "brace" is very strongly preferred to other patterns. A visit to any carpenters' or engineers' bench will at once confirm that this principle is correct.

FINANCES OF GUY'S HOSPITAL.—Mr. F. P. Whitbread, treasurer of Guy's Hospital, announces that last year the income was £192,435, the highest ever reached; for the first time since 1925 it exceeded the expenditure. Mr. Whitbread adds, however, that it will take many years of surpluses or princely benevolence to remove the incubus of debt accumulated in the recent difficult years. The average daily number of patients was 560, a fall of nine per diem. Provisional assessment of in-patients produced £4422; patients below the income limit contributed £1345. There has been an increase in receipts from out-patients of £2300 although the higher charges have been in operation for only seven months. The registration fee is 1*s.* for adults and 6*d.* for children, and the charge for a week's supply of drugs has been raised from 6*d.* to 1*s.*

THE LANCET

LONDON: SATURDAY, JUNE 24, 1933

THE ORIENTATION OF BUILDINGS[1]

IT is long since FLORENCE NIGHTINGALE when laying down the principles of hospital construction drew attention to the virtues of sunlight in the cure of disease in England. "All hospital building in this climate," she wrote, "should be erected so that as great a surface as possible should receive direct sunshine. . . . Window blinds can always moderate the light of a light ward, but the gloom of a dark ward is irremediable . . . the window space should be one-third of the wall space. The escape of heat may be diminished . . . but whilst we can generate warmth, we cannot generate daylight or the purifying and the curative effect of the sun's rays." For long after her death little serious attention was given to the construction of hospitals from this point of view, and it was not until 1930 that the Royal Institute of British Architects found it desirable to appoint a joint committee to explore the proper orientation of buildings. This committee, of which Mr. P. J. WALDRAM was the chairman, in setting about its work looked into the records of previous investigations, and found little of value apart from the plans made by architects in the interpretation of our ancient law of the rights of light. The subject, though much neglected, was found to be not in itself intricate, though common ignorance of its elements lend interest even to simple discoveries. There is no record that even when scholastic curricula included "dialling and the use of the globes," it was realised that a wall facing due north in June enjoys over half an hour more possible sunshine per day than a wall facing north-east or north-west, or that a wall facing due south enjoys about two and a half hours more possible sunshine per day at the equinox than it does at midsummer. Even architects, in whom such ignorance is less pardonable than in their clients, are in the habit of working to old wives' formulæ which have never been really accurately tested. They have now to learn to apply a new science, and happily many of them are eager to do so. The establishment on a scientific basis of the calculation of acoustics, and now of insolation and orientation, is welcome, for it must have great influence in the development of new forms of building, if not even in a new plan of living. The committee, whose report has now been issued, admits that many existing dwellings, offices, schools, and hospitals do not deserve and are unlikely to receive the flattery of imitation by future generations, and calls attention to the distressing spectacle of patients' beds being taken out on to escape staircases of well-known hospitals for want of any more convenient place for open-air treatment. But not only in hospitals, where the principles of insolation must be accounted of the greatest importance, but in the design of offices, factories, schools, and in the great mass of slum clearance work these principles must be applied. The report is divided into four sections, wherein (1) existing information is analysed; (2) practical methods of measuring the sunlight are classified and recommended, with the special mention of the heliodon; (3) the application of this new knowledge to buildings and to town planning is set out; and (4) the use of special glasses is discussed. Appendices cover mathematical work and instruments.

A convenient and simple unit of measurement of the hours of possible sunshine was one of the first tasks of the committee, who finally came to consider the sun's radiation as a fluid to be assessed as a volume of sunshine admitted by the window, involving in its calculation nothing not contained in architects' plans and drawings. Several instruments for the assessment of sunshine have been evolved, some before the committee started its work, but the more important by the committee in collaboration with the Department of Scientific and Industrial Research. Of these, the heliodon emerges as being the most practical instrument—neither too bulky or expensive to form part of the equipment of a reasonably busy architect. The principle of this instrument is simple. It consists of a board adjustable about one axis and capable of rotation about a vertical axis fixed in relation to a lamp representing the sun. The time corresponding to any position is indicated by a pointer upon a circular scale of solar time, and change of season is effected by sliding the lamp upon a vertical scale. With this apparatus it is possible to reproduce exactly the incidence of sunshine upon a building for any given conditions, while daily periods of sunlight exposures or insolation can be obtained by rotating the board and noting the times at which the sun begins and ceases to shine upon various parts of the model. The value of the instrument lies in its adaptability to any type of building or site for which a small scale model can be made.

General appreciation of the therapeutic value of sun and air has come at a time when by new constructions of steel and reinforced concrete, and advances in the design of sliding windows, plate glass, and many other items of equipment both can be exploited fully. A short section on the use of glasses transparent to U.V. rays supplies a sane presentation of this controversial subject. The conception that in buildings thus glazed effects comparable to those resulting from out-door exposure can be obtained is shown to be absurd, not only by reason of losses by reflection but also because the greater part of the short wave ultra-violet radiation, received out of doors, reaches the earth via the blue sky and not directly from the sun. The amount of radiation reaching a point within a building must therefore depend largely on the fraction of sky visible, which for most parts of an ordinary room is surprisingly

[1] Being the report, with appendices, of the R.I.B.A. Joint Committee on the Orientation of Buildings. 5*s*.

small. Another factor, not mentioned in the report, which limits in practice the benefit obtainable from U.V. glass for high windows and skylights is the diminution of its transparency to U.V. rays caused by such a thin layer of dirt or dust as to be almost imperceptible. When the cost is estimated the labour of frequent polishing—sometimes a considerable item in inaccessible places—must be allowed for. With these limitations, and provided the presence of this glass is not regarded as a substitute for open windows, its installation may be valuable, especially, as the report says, where sun treatment is required for convalescents without exposure to cold winds, and in offices where wide open windows may be undesirable. As regards heat-absorbing glasses, in this country over-heating by the sun is held to be rarely serious except in buildings with large areas of roof-glazing, when a coat of whitewash is said to be a more efficient and cheaper expedient for reducing it than any other.

It is in plans for the actual construction and orientation of new buildings that the greatest changes are promised. R. DU JARRIC DE LA RIVIÈRE, in a beautifully illustrated contribution to the official organ of the International Hospital Association [2] on air and light in hospitals, shows to what extent hospitals abroad are making use of the new knowledge, notably in the Hôpital de Paris-Clichy and the Hôpital de Colmar. In the report two types of hospital are contrasted: one, made up of old wards with small windows, and sanitary and staircase towers at the south end; and the other a new "verandah" type ward with sliding windows on three sides. The insolation of these alternative types is shown through the four seasons of the year, and we have only to look at the diagrams to see how starved of light and air was the old kind of ward, without taking into account the purely mental effect of open prospect denied. As the report says, till recently hospital planning had with few exceptions become standardised into the familiar ward with its long axis running north and south, with windows on each side facing east and west between beds placed at right angles to the external wards. That type of hospital is now doomed, will never be repeated, and may, we hope, be pulled down or altered as rapidly as funds will permit.

[2] Nosokomeion, 1933, iv. 1, 14.

MECHANISM OF INFECTION IN ACUTE POLIOMYELITIS

THE theory is still current in many quarters that acute poliomyelitis is primarily a general "systemic" infection and only secondarily a disease of the central nervous system. This is not unnatural in view of the existence of an early preparalytic phase in which a number of "constitutional" symptoms are apparent, and of the fact that in certain cases the disease may not proceed to the paralytic stage at all. The practical importance of such an assumption cannot be overestimated because upon it depends the belief that in some instances poliomyelitis may not extend to the nervous system at all while in others successful systemic treatment may prevent such extension. We are indebted to H. K. FABER [1] for a careful analysis of the experimental, pathological, and clinical data upon which theories of the methods of inoculation and spread of the disease are based. There is in fact little reason for supposing that any general infection takes place or that the nervous system is secondarily infected through the blood stream. There is, on the contrary, very great support for the theory, originating with R. W. FAIRBROTHER and E. W. HURST [2] in this country, that infection of the nasal mucous membrane is followed by an axonal propagation of the virus directly to the olfactory bulb. The subsequent route of infection mapped out by FABER involves in order the olfactory tract, hypothalamus, thalamus, and then turns caudalwards by the spinothalamic, or possibly the reticulospinal tracts. The distribution of the inflammatory changes in autopsy material favours this route. Moreover, a striking observation by G. W. JUNGEBLUT and W. J. SPRING [3] offers some experimental confirmation. They transected the cord of a monkey at the level of the first lumbar vertebra, then inoculated the brain with virus and found after nine days that typical lesions were present in the cervical and thoracic cord, but were absent from the lumbar cord, despite the fact that the lumbar cord is the site of predilection in the experimental disease. In a somewhat elaborate analysis FABER attempts further to correlate the clinical symptoms chronologically with stages in the caudal spread of the virus, and shows the early "constitutional" symptoms of the disease to be explicable in terms of hypothalamic derangement. This view is likely to excite criticism, but should receive careful consideration in view of the circumstance that several observers have recorded the persistence of psychic changes and disturbances of sleep for weeks or months after the acute illness has subsided.

The bearing of the theory of axonal propagation on the question of treatment is of the highest importance. FABER concludes that the value of serum therapy is as yet an open question. There is a lack of standardisation and the application of this method of treatment in general practice is perforce very imperfectly controlled. The assumption that convalescent sera have a superior neutralising power has been shown by H. S. SHAUGHNESSY, P. H. HARMON, and F. B. GORDON [4] to be erroneous, and if their work is confirmed it is obvious that those adults who possess a high neutralising titre will have to be selected as donors of serum. Two routes have been used in administering serum, the intrathecal and the intravenous. If the axonal theory of virus propagation is correct there is little likelihood that the intrathecal method will be of much benefit on

[1] Medicine, 1933, xii., 83.
[2] Jour. Path. and Bact., 1930, xxxiii., 17.
[3] Proc. Soc. Exp. Biol. and Med., 1930, xxvii., 1026.
[4] Ibid., p. 742.

account of the impenetrability of the pial investments of the cord and its perforating vessels. The intravenous method, which has been used on the assumption that there is a general systemic infection, has, however, a greater potential chance of being effective because the serum will be brought nearer to the perineuronal field where the inflammation is in progress. Moreover, the increased capillary permeability in such inflammatory foci will favour the transudation of antibodies. The method that should be tried therefore is "to supply the maximum concentration of antibodies in the blood at the earliest possible moment and to maintain this concentration as long as necessary." The theoretical grounds for adopting this trial method appear to be unassailable.

ST. GEORGE'S HOSPITAL

THIS week that great institution, St. George's Hospital, is celebrating the 200th year of its existence, and its career forms a fine and often a dramatic exhibition of the development of a medical charity, as a centre alike of healing and of learning. The events are set out in a lucid history by Dr. J. BLOMFIELD which will appear in a few days, and which, illustrated, as it is, by excellent reproduction of old prints, forms a fascinating chapter in the history of London.[1] St. George's is bracketed fourth in seniority among the great London teaching hospitals, St. Bartholomew's and St. Thomas's being mediaeval institutions, while THOMAS GUY endowed his noble charity early in the eighteenth century. But about the date of the foundation of Guy's Hospital the Westminster Infirmary, which was filling the rôle of a voluntary hospital more completely than any other body then existing in the city, decided to change its premises. A division of opinion among the governors resulted in the twin birth of two voluntary hospitals, the majority of the subscribers remaining with the Westminster Infirmary, now the Westminster Hospital, while the minority of the supporters acquired Lanesborough House, a mansion built 20 years before "near Hide Park," to copy the lettering of an early print. The mansion was obtained on lease at an annual rent of £60, but later became the property of the governors of the hospital for the capital sum of £600. Lanesborough House was then more or less in the country; except for a few stately homes, Chelsea and Kensington were open fields, with houses discreetly gathered round the parish churches. Despite the fact that the rent was low, and the purchase price only ten times that rent, the experiment was a brave one, for money 200 years ago had a very different value, and land a very different price, but it was successful from the beginning. The founders of the hospital were men of affairs, well-known doctors, clergymen, and prominent citizens, and so prompt and fruitful were their endeavours that an imposing mass of public support was quickly obtained, the PRINCE OF WALES—FREDERICK, the eldest son of GEORGE II.—accepting the chairmanship. Among the early subscribers were QUEEN CAROLINE, and other members of the Royal Family, many members of the House of Lords, spiritual and temporal peers, Sir ROBERT WALPOLE, the all-powerful minister, and DAVID GARRICK, unrivalled in popularity. Some idea of the pace at which the institution developed may be gathered from the fact that when the house was rebuilt and opened as a hospital for the reception of patients on Jan. 1st, 1734, there were 30 beds provided, but only 11 years after the inauguration there were 250 beds in a reconstructed building, wings and stories having been added as need arose.

The hospital gained steadily in reputation and usefulness. During the first 50 years of its life examples can be found in the rules, the diet tables, and the personnel of the management, forming vivid and painful illustrations of the standards of living and manners of the eighteenth century; but the steady support of generous donors and subscribers enabled St. George's to compare favourably throughout with its similars, and to justify its popularity with the suffering poor. The arrival on the staff of the great JOHN HUNTER in 1768 set the stamp of scientific success upon it. JOHN HUNTER served St. George's Hospital from 1768 till his death in 1793, and during that period was Surgeon Extraordinary to the King, and Inspector-General of Surgery in the Army, while he was bringing his discoveries in the realms of comparative anatomy and physiology into the service of practical surgery. Some 20 years later another member of the staff of St. George's Hospital achieved scientific immortality. THOMAS YOUNG, who was elected physician in 1811, made a communication while a medical student to the Royal Society in which he explained the accommodation mechanism of the eye, and was immediately elected to that distinguished body. YOUNG seems to have possessed the most purely brilliant intellect with which a medical man was ever endowed. He was in no way prominent as a doctor, but he propounded the undulatory theory of light, which replaced NEWTON'S molecular theory and remains in common application, although the explanations furnished by it are incomplete; he deciphered the Egyptian hieroglyphics; and at the Royal Institution displayed the possession of a complete range of such knowledge as then fell under the denomination of natural philosophy. Other sons of St. George's have been great not only in their day, and have left fine legacies of learning behind them. Such are ROBERT KEATE; BENJAMIN BRODIE; the two great anatomists, CARPUE and BROOKES; CAESAR HAWKINS, PRESCOTT HEWETT, TIMOTHY HOLMES, BRUDENELL CARTER, and CLIFFORD ALLBUTT—and other names deserve addition; while HENRY GRAY, who, like YOUNG, was elected to the Royal Society before he was 30, has had a household name with medical students for years, and bids fair to retain his fame under assiduous editing.

With such a past the future of the hospital is assured, whatever alterations in material policy may be entailed upon the controlling authorities by the vast changes which 200 years have witnessed.

[1] This book is already on sale at the hospital, and at the Medici Society, 7, Grafton-street, W., at 5s.

Those years have been accompanied by general revolutions in knowledge, manners, customs and amenities which can be illustrated in the broad calculation that the property purchased in 1733 has in 1933 appreciated by 2000 per cent. The rough arithmetic displays the position. It points to the huge alterations in environment, and indicates alike the splendid chances and grave responsibilities ahead of the governors of St. George's to-day. They possess a potential fortune with which to build a new hospital, assuming, which is now inevitable, that in the near future the site of the charity will be changed; but as their capacity to purchase has mounted, so, in similar proportion, has been aggravated the value of any new sites upon which the hospital could continue to fulfil its purposes in the time to come, as it has fulfilled them splendidly in the past. And, such a site being found, all know that the modern general hospital cannot be hastily manufactured out of a nobleman's derelict mansion, to be altered as needs press; on the contrary its construction is an expensive architectural and technical achievement. The time approaches when the situation will have to be met, and it is common knowledge that anxious attention is being devoted to its problems by those wholly alive to the magnitude of the task, and also wholly aware of the public claims upon the charity. The past of St. George's Hospital is one that not only St. George's men but all medicine may be proud of; a future of similar success lies assuredly before it.

ANNOTATIONS

THE CANCER DISCUSSION

SINCE the experimental investigation of malignant disease was first put on an organised basis in this country some 30 years ago, an increasing number of workers have devoted their entire attention to this line of research, and those outside this specialised circle find it difficult to appreciate exactly what is being done and where it is leading. From time to time cancer congresses are held in which men engaged in the various branches of the subject have an opportunity to meet and discuss their results, but in such symposia the main facts tend to be obscured by a mass of detail. A discussion devoted to generalities such as that recently held at the Royal Society serves, therefore, a very valuable purpose. We have already published the opening address given by Dr. J. A. Murray, and we now record the contributions of subsequent speakers (see p. 1344). It is clear that as a result of 30 years' work our knowledge of all malignant disease has been enormously increased, but the main problems still await solution, and the vast amount of information available in the literature tends, if anything, to obscure the fundamental questions. In a masterly summary of the subject, Dr. Murray described the essential characters of the malignant process and indicated the most fruitful of the lines along which investigations may be expected to proceed. Theoretical speculations as to the cause of cancer no longer hold the important place which they did in the minds of the past generation, and the student is no longer burdened with the necessity of discussing critically various cancer theories which have been enunciated from time to time, for it is now well recognised that they all beg the question. A theory—the genetical hypothesis originated by Boveri and modified by Bauer—which has recently received considerable attention is merely an attempt to express the change which may distinguish the malignant cell from its innocent forebear, but it affords no explanation as to how this change is brought about. Like others, this theory, as Dr. Murray said, is not susceptible of proof or disproof by experimental methods. The two main lines of investigation which are occupying cancer workers at the moment are the study of experimental carcinogenesis and the analysis of the malignant tumours occurring in fowls. It would appear from the discussion that our knowledge of the virus tumours of fowls has been anything but clarified during recent years. The original hypothesis of Gye and Barnard has been submitted to serological investigation, and though in many ways the presence of a virus would seem to be indicated by the results obtained in this field, it is clear that much yet remains to be done before the case can be considered as proven. In the meantime all attempts to correlate these bird tumours with mammalian growths, except histologically, have failed. One of the most striking of the observations brought out in the discussion is the chemical relationship of accepted carcinogenic agents to substances normally occurring in the body; and the fact that the same substance can produce œstrus on the one hand and a carcinoma on the other is surely not without significance. It is not claimed, of course, that the body actually forms carcinogenic agents from its own constituents, but it cannot be said that such transformations are impossible. Speculations in this field are fascinating but perhaps dangerous, and for the present it is to be hoped that they will merely serve as stimulants to future work and will be denied too facile verbal expression. Time cut short a most interesting discussion, but enough was said to make it clear that meetings of this kind devoted to the consideration of basic principles have their definite place in the scheme of cancer research.

UVEO-PAROTID TUBERCULOSIS

THE commonest disease involving the parotid glands is epidemic parotitis or mumps, and the diagnosis of a typical case is usually easy. Occasionally the virus affects salivary glands other than the parotid, which may escape altogether, and then, except in institutional outbreaks, the diagnosis of submaxillary or sublingual mumps may be difficult. On the other hand, conditions due to some other toxic or infective process may at first be mistaken for mumps because enlargement of the parotid glands forms part of the clinical picture, notably the syndrome described by Mikulicz in 1892 and characterised by chronic painless symmetrical enlargement of salivary glands and, typically, of the lacrymal glands as well. The ætiology of the syndrome is obscure. Although some cases are definitely associated with such diseases as leukæmia, tuberculosis, or syphilis, others, for lack of any known ætiological factor, are classed as idiopathic. A. J. Schaffer and A. W. Jacobsen,[1] however, believe them to be due to a low-grade infection. R. W. B. Ellis[2] demonstrated last year a child, aged 7, suffering from the idiopathic

[1] Amer. Jour. Dis. Child., 1927, xxxiv., 327.
[2] Proc. Roy. Soc. Med. (Sec. Dis. Child.), 1932, xxv. (No. 4), 420.

form who had been sent home from school with the diagnosis of mumps on four occasions.

In a recent paper H. G. Garland and J. G. Thompson [3] make a critical analysis of the syndrome described by C. F. Heerfordt in 1909 under the name of "febris uveo-parotidea," which he and others believed to be a complication of mumps. The syndrome is characterised by chronic inflammatory lesions of the uveal tract and enlargement of the parotid glands, and is sometimes accompanied by mild fever. Paralysis of the facial nerve is a frequent complication. Garland and Thompson analyse 47 cases, including their own patients. Of these 32 occurred under 30, female patients predominating. In rather less than half the cases in the series prodromal symptoms occurred, lasting from a few days to three months, and consisting of general malaise or gastro-intestinal symptoms. Erythema nodosum, cough, amenorrhœa, and night sweats were among the less common manifestations. Parotitis, nearly always bilateral but not necessarily symmetrical, occurred in all the cases, and began usually in the pre-auricular portion of the gland to which it was sometimes confined. The swollen glands, which were firm, nodular, and nearly always painless, caused no difficulty in mastication and never suppurated. The enlargement lasted from two weeks to two years; permanent induration might remain. Bilateral uveitis occurred in every case, not uncommonly as the first manifestation, irido-cyclitis being the most constant form. Posterior synechiæ were prone to develop and permanent fixity, irregularity, or inequality of the pupils sometimes resulted. Iris nodules occurred in a third of the cases. Relapses of the ocular condition were not unusual and were associated with general disturbance of health. Facial palsy of sudden onset was noted in half the cases, the lower part of the face being usually affected, probably as a result of direct involvement of the nerve in the parotid lesion. In a third of the cases slight pyrexia limited to an evening rise of temperature was noted at some stage of the illness. Only four fatal cases of true uveo-parotid fever are known and in three miliary tuberculosis was found at autopsy. Garland and Thompson point out that more than a third of the cases recorded showed incontrovertible evidence of tuberculosis. They believe, and this is in accord with continental opinion, that the cause of the condition is tuberculosis of a particularly fibrosing and non-caseating type, the myocardium in some cases being similarly affected. Uveo-parotid tuberculosis is suggested as a more suitable name for the condition than uveo-parotid fever.

LONDON WATER

LAST year the Metropolitan Water Board distributed water amounting to nearly one-fifth of the total flow of the Thames and its tributary the Lee. This fact is shown in Sir Alexander Houston's twenty-seventh annual report [4] to the Board, of which he is director of water examination. The eight water companies whose concerns were taken over by the Board supplied water of very varied quality, some very good, some possessing not only a large bacterial flora but a considerable protozoan fauna. Systematic supervision and assiduous research, for which Houston has been mainly responsible, have raised the quality of London water to a high level. The Thames and the Lee both receive the sewage effluent of many towns. Before the war purification was effected by storage, which allowed both sedimentation of suspended matter and oxidation of organic impurities, and during which the action of light and the efflux of time caused the death of bacteria whose natural habitat—the intestines—is both dark and warm; purification was completed by filtration through sand. In 1905 Houston had, as an emergency measure, sterilised the typhoid-infected Lincoln water; in 1910 one somewhat polluted well in the metropolitan district was sterilised in the same way; and in 1916, as a war economy, raw Thames water was chlorinated without much other treatment. Although there was much prejudice against chlorination, its advantages were too patent for any water undertakings, here and on the Continent and the United States, to give it up when once adopted. Nevertheless certain difficulties had to be overcome. The dosage for raw water was rather heavy, as, besides the bacteria which it was used to kill, the organic matter, both in solution and in suspension, interacted with chlorine, and some of the products had tastes which were much disliked by consumers. Yet selective chlorination of the bacteria only was impossible. If the chlorinated water was to be acceptable these tastes must be removed. Of various methods tried by Houston treatment with permanganate, and later pre-treatment with ammonium salts leading to the formation of chloramines, were found the most effective. A better plan was however discovered, and now it is only in exceptional circumstances—e.g., when unstored water is sent to the filter-beds—that pre-filtration water is chlorinated. Chlorination is only used to effect the final sterilisation of stored and filtered water, after the addition of 0·1 part per million of nitrogen as ammonium sulphate to prevent taste troubles. Although only from 0·2 to 0·3 part per million of chlorine is added, from 96·4 per cent. to 100 per cent. of chlorinated Thames waters contained no coliform bacteria in 100 c.cm. during 1932, and the removal of unpleasant flavour was most successful. But popular feeling may change about this, for, Houston tells us, in some American cities, which suffered grievously in the past (before chlorination was practised) from water-borne epidemics, the consumers often complain, not when the water has a taste but when it is tasteless, as they then imagine that the waterworks authorities are *under-dosing* with chlorine, and fear the consequences.

Chlorination is not the only sterilising process which has been examined by the Board; among others ozonisation has been chosen for experiment on a small scale. The average reduction of total count of organisms growing on agar at 37° C. in Thames water, after passing through No. 5 reservoir and the rapid primary filters at Barn Elms, was from 97 colonies per c.cm. before to 17 c.cm. after ozonisation. The untreated water contained typical *B. coli* in 1 c.cm. in 78·6 per cent. of the samples, whilst after ozonisation none of the whole 28 samples contained any in 100 c.cm. The colour of the water was also improved. The Paris authorities have decided on the ozonisation daily of about 60 million gallons of the city water-supply, on the basis apparently of a statement attributed to Prof. Roux of the Pasteur Institute: "Le traitement de purification des eaux par l'ozone est le meilleur des procédés de stérilisation actuellement connus." The need for constant watchfulness is stressed by Houston who quotes with approval a remark of Wolman that "epidemics of enteric fever in enlightened countries do not vanish. They are *merely held in abeyance* by the most rigid control of source, treatment, and distribution of our water-and food-supplies." Houston's tireless care is well exemplified in the sterilisation of the Cobbins brook into which the Epping sewage

[3] Quart. Jour. Med., April, 1933, p. 157.
[4] London: P. S. King and Son. 10*s*. 6*d*.

is discharged. Nine months after the Epping paratyphoid outbreak of 1931 had subsided the effluent still contained paratyphoid organisms, and the sterilisation of both the brook itself, which enters the Lee above the Board's intakes, and of the finally filtered water has been continued to the present time. So far as he knows, Houston says, "this is the first case in which the sewage of a town, which had suffered from an epidemic of paratyphoid fever, has been kept under sustained bacteriological observation. The results are surprising and disquieting, and afford proof of the profound difference between ordinary sewage and sewage coming from an infected town, and show that paratyphoid bacilli may persist in such a sewage for a very long time."

CARBON DIOXIDE WITH DISCRETION

THERE is now a wide vogue for the use of carbon dioxide gas in association with inhalation anæsthetics. The gas is employed to facilitate induction of anæsthesia, to stimulate failing respiration, and to hasten the elimination of inhaled anæsthetic vapours. It is timely therefore to draw attention to the great powers which carbon dioxide has for evil as well as for good. Anæsthetists do not all appreciate the varying reaction to the gas of different normal individuals under identical conditions; this difference of reaction is even more marked among the sick. A dose of CO_2 safe enough at one time may be dangerous to the same person under altered conditions, or to other persons under the same conditions. R. M. Waters [1] quotes the case of an infant showing marked respiratory obstruction under ether. Its colour was kept pink by high tension of oxygen maintained in the atmosphere which passed the obstruction with each respiratory effort. A carbon dioxide mixture was foolishly administered on the release of the obstruction at the end of operation, without regard to the probable association of high blood carbon dioxide with the respiratory obstruction. Both respiratory and circulatory depression followed immediately and the infant died within a short time. Waters attributes the fatal issue in no small measure to the addition of carbon dioxide at the end of this anæsthesia. The highest concentration of CO_2 which the average person can inhale without producing subjective symptoms appears to be 10·4 per cent. This produces the maximum stimulation of respiration and can be inhaled for two and a quarter minutes. Obviously it is not to be employed in ordinary practice; 7 per cent. seems to be the highest dosage to be used in connexion with anæsthetics, a concentration of 10 per cent. inhaled for 10 minutes or so producing unconsciousness. Attention to these findings should prevent a valuable restorative from falling into disrepute.

PELLAGRA IN DENMARK

ONLY a short time ago we were inclined to consider pellagra as an exotic disease in which we, who lived at home, need not take any but a detached interest. A good deal of evidence is now available in support of the view that pellagra develops in European countries, not as a rare curiosity, but as a comparatively common complaint, particularly in institutions for the insane. In a recent number of *Hospitalstidende* (March 30th, p. 325) three papers by four authors show that in Denmark, at any rate, pellagra is to be easily found for the looking. In the first paper, Dr. T. E. Hess Thaysen publishes four cases and discusses the criteria by which pellagra is to be diagnosed. Although he admits that recent investigations suggest that the dermatitis of pellagra may be absent even in otherwise typical cases, he believes that for the present diagnosis should be influenced primarily by the characteristic changes in the skin. These often begin with a vesicular or pustular erythema. Brown or dark brown pigmentation supervenes, and hyperkeratosis is a comparatively late manifestation. The extensor aspect of the hands and forearms is a favourite site for the dermatitis, which may also form a butterfly pattern on the face, with the nose forming the body of the butterfly. Thaysen's cases show that even when the dietary is sufficiently mixed and apparently contains an adequate supply of vitamin B_2, severe pellagra may develop if chronic disease of the gastro-intestinal tract impairs the absorption of food. In one of his cases a specially selected vitamin B_2 dietary had no effect on the disease until the chronic diarrhœa, from which the patient also suffered, was arrested. In the same issue of the journal is an account by Dr. Else and Dr. H. P. Stubbe Teglbjaerg of the search in an asylum for pellagra which is commonly associated with mental disease. They succeeded in six months in diagnosing five cases of pellagra, and in the records of the asylum they found three other cases to which they could fix the label of pellagra. The mental patient who refuses to eat seems to be particularly liable to contract pellagra on the slops with which he is forcibly fed. These observers suggest that other asylums might yield a goodly crop of cases of pellagra were they to be searched with this disease in mind.

THE EARLY HISTORY OF OPHTHALMOLOGY

THERE has always been a large demand for the services of those supposed to be skilled in the treatment of eye diseases. This demand was met until modern times by remedies principally founded upon superstition. How far this was true in the days of the Roman Empire we do not know, but it is a matter of some interest that several oculists' stamps dating from Roman times have been found in Britain. A photograph of a good example from Cirencester serves as a frontispiece to a history of ophthalmology which has recently been published [1] in book form, having previously appeared serially in the *British Journal of Ophthalmology*. The stamps are generally inscribed with the name of the practitioner to whom the stamp belonged, the name of some special medicament, and the name of the disease for which it was prescribed. In Anglo-Saxon times, formularies for eye diseases appear to have consisted mostly of charms. In the thirteenth century Roger Bacon and his contemporaries John de Packham and Robert Grosseteste began seriously to investigate the science of optics but in other respects, according to Mr. James, there was very little advance before the seventeenth century. Richard Banister, who died in 1626, published a work on the eye which was partly a compilation from earlier sources and partly original. "Gutta Serena," which was apparently a name for blindness without any obvious cause, is there discussed, and it is to the author's credit that he claimed only two successes for the treatment of this condition, and also that he recognised hardness of the eye as of bad prognostic import. Later in the century William Briggs published works in which the functions of the lens and the retina are correctly stated, and the

[1] Jour. Amer. Med. Assoc., 1933, c., 1276.

[1] Studies in the History of Ophthalmology in England prior to the year 1800. By R. Rutson James, F.R.C.S. Eng., consulting ophthalmic surgeon to St. George's Hospital and senior editor of the British Journal of Ophthalmology. Cambridge University Press. 1933. Pp. 255. 15s.

fibres of the optic nerve are traced to the thalamus. In the eighteenth century attention was being devoted to eye cases at some of the London hospitals. The prevalent operation for cataract was still couching, and in some hospitals surgeons were elected to the staff expressly for this purpose. In the middle of the century, however, Daviel's operation of extraction was introduced and improved upon by two Guy's surgeons, Samuel Sharp and Joseph Warner. William Cheselden's operation of iridotomy was another distinct advance. Even by the end of the century, however, orthodox ophthalmology had gone but a very little way and the great reputations of the century were won by quacks and charlatans. Of these Sir William Read, who was appointed oculist to Queen Anne, wrote a book on eye diseases which has been the subject of an elaborate research by Mr. Arnold Sorsby, to whom Mr. James expresses his indebtedness. It seems clear that the only original part of Read's book consists of a series of puffs of his own successes. An amusing advertisement heralding his approaching arrival in the city of Oxford is here reproduced. The most famous of these quacks however was the Chevalier Taylor. The best account of him was written by the late George Coats, whose opening paragraph reads :—

"In the eighteenth century ophthalmology had not yet vindicated, in England, its position as a separate branch of practice. It was the province of a set of ambulant practitioners who toured the country accompanied by all the apparatus of shameless advertisement (including 'monkies,' we are told), couching cataracts and selling infallible salves and eye-washes. This taint of quackery appears to have deterred respectable surgeons from meddling much with the subject; their operative experience was probably small, and the procedure of couching attended frequently with brilliant immediate but disastrous after-results, was likely to be performed with fewer scruples by itinerant oculists, here to-day and gone to-morrow, than by settled practitioners who had to abide the consequences of their handiwork. Among these travelling quacks the name of the 'Chevalier' Taylor stands pre-eminent for unblushing effrontery, blatant self-laudation, and all the methods of the charlatan but also for mental endowments far above the average of his tribe, and for a real acquaintance with the contemporary state of ophthalmic knowledge."

This man, who heralded his arrival in every fresh town with blatant advertisements, made his entry in a coach and six painted all over with eyes, and gave lectures and demonstrations to which the nobility and gentry were invited, was appointed oculist to King George II. in 1736, and acquired not only notoriety but wealth. It must be confessed that up to the end of the period of which Mr. James's book treats ophthalmology made a very poor show. In his preface he expresses the hope that some English surgeon may be tempted to take up the work where he leaves it and add a volume on the giants of the nineteenth century.

THE SOCIAL ASPECT OF BED-WETTING

IT was many years ago that Ernst von Düring was led to remark "Many tramps are bed-wetters, but not because they are tramps: they are tramps because they wet their beds"; and he called pointed attention to the severe social and economic damage undergone by those who suffer from enuresis. No one knows exactly what is the proportion of this failing among the population at large. Among Kent school-children inquiry suggested that there were rather more than 1 per cent. who wet their beds at night, but Dr. W. H. de B. Hubert, in an article which appeared in our last issue (p. 1281), spoke of 8 to 10 per cent. among an unselected group of children from L.C.C. residential schools. Dr. Friedrich Dietel, first assistant in the Erlangen dermatological clinic, who wrote a monograph [1] on enuresis a few years ago made no attempt to estimate the proportion but remarked that not infrequently the enuretic children showed a certain inferiority of constitution; they were as a rule definitely behind their contemporaries in some respects, learning to stand, to walk, and to speak later than other children, and definitely later in getting control over bladder and rectum. He and others would have expected to find enuresis definitely more frequent in the lower social grades and especially in places where tramps congregate and in penal institutions. But that is not so, according to careful inquiries made by the late Dr. Ethel Bentham in the London casual wards. Dr. Bentham however was of opinion that enuresis was often a primary cause of women falling out of decent occupations. She knew herself of many young maid-servants who lost their jobs because of this infirmity, and she mentioned at the time the head of a big institution in Amsterdam who attached so much importance to this factor in social inferiority that if any boy or lad, who came in, showed any tendency to it he was put through a special course of three weeks' treatment to cure him of it, generally with success. It may of course be true that to some extent enuresis and the wanderlust have a common source. Two books reviewed in a recent issue (May 6th, p. 969) throw some light on this. Dr. H. C. Cameron, one of the few pædiatricians who has given the matter the attention it deserves, regards enuresis as hysterical in nature, aggravated by fatigue and acidosis and by the unhappiness which it engenders. Dr. R. J. Batty, from study of Lancashire children, attributes enuresis largely to bad economic and hygienic conditions. Dr. Hubert however found that the intelligence of the children sent to the Maudsley Hospital for enuresis was very similar to that of children referred for other reasons. In 24 per cent. of them there was a marked anxiety state of behaviour or disorder. He did however find rather strong evidence of heredity, 40 per cent. of the children referred for treatment having had parent, uncle, or aunt who suffered similarly when children. Common ground of all these clinicians, from whatever aspect they studied bed-wetting, is the conviction that in enuresis we have not to deal with an incurable condition, however troublesome and intractable it may be. Patient persistence with the appropriate treatment will often eventually bring success.

ACCIDENTS AND COMPENSATION

THE original Workmen's Compensation Act of 1897 was recommended to Parliament as a proposal which would stop the endless litigation between employer and workman. This was the intention; in practice it has led to far more litigation. The Act itself has also received a little more abuse than it perhaps deserves because, being based on insurance and not on negligence or breach of duty, the system is naturally reviled whenever any technical limitation bars the workman's claim. The original promoters of the Act probably did not foresee the effect on industry. A man susceptible to silicosis should of course be kept out of employment which specially exposes him to that risk; the particular scheme is good, but its universal extension would raise many difficulties. As it is, judges now incline to say that if a man with a bad heart dies suddenly at any time during or after working hours, the employer must

[1] Das Bettnässen: seine Ursache und Vorschläge zu seiner Behandlung. Munich: J. F. Lehmann. Pp. 85. M.4.50.

pay. Pushed to its logical end that would mean no employment for anyone with a weak heart. The consequent burden on industry, and the prospects of malingering, would be devastating. Another of the original motives lying behind the legislation was that penalising the occurrence of accidents would lead to greater care being taken for their prevention, but this has by no means come to pass. At the recent National Safety Conference a suggestion was put forward by Dr. H. B. Morgan, recently appointed medical officer to the social insurance committee of the Trades Union Congress General Council, that accidents and compensation should be removed from industrial treatment and dealt with by a national board. We do not know the details of his plan, but advantage might accrue from considering the procedure adopted for awarding compensation in cases of silicosis. Here experts, from whom there is no appeal, decide from its commencement upon each case, and watch its progress; moreover, these same experts have examined each worker on engagement and periodically thereafter. There would only remain for the courts to decide the financial aspect of each case, having regard to the wages earned. Such a board would avail itself of the new knowledge which is being acquired regarding the occurrence of accidents; we know that 75 per cent. of accidents can be avoided by excluding from exposure to risk that 25 per cent. of applicants who possess an accident-proneness to that risk. Industrial experts, possessed of such knowledge, would examine applicants for work and exclude this 25 per cent., just as to-day the silicosis experts exclude from exposure to the silica hazard those whose respiratory organs are in any way unsatisfactory. There is great need for such experts to-day; the money they would save to industry and the injuries they would save to the workers would amply pay for their services. They should be whole time and independent, appointed as are certifying factory surgeons to-day. A pressing problem of modern industry might then be largely solved in the interests of health, safety, and economic productivity—namely, to fit the worker to his work.

THE EXUDATIVE DIATHESIS

IN another column we publish a paper by Dr. C. P. Lapage read before gatherings of his clinical colleagues and representing the fruits of a large and varied experience. Dr. Lapage was led to associate in his mind a number of childish disorders so varied as urticaria, asthma, cyclical vomiting, angioneurotic œdema, and to find common factors in the life-history of these children. These common factors make up what he regards as a diathesis, and this conception has added interest to his work by enabling him to interrelate, classify, and evaluate many groups of apparently unrelated symptoms. There are many of his colleagues who have had the same opportunities of studying children who do not regard these diverse ailments as manifestations of constitution or diathesis, and who find something intangible in the grouping, but it is both fair and wise not to reject lightly any working hypothesis which adds a stimulus and a direction to clinical practice. Many of these hypotheses do not stand the test of time, but it is not irrevelant to recall that Linnæus, when he classified the flowering plants of Europe by counting the stamens and pistils, laid the foundation of a systematic study of the varied manifestations of plant life which directly led to the delimitation of the natural orders of our present botanical teaching. In a recent paper two other clinical observers, Dr. W. G. Wyllie and Dr. Bernard Schlesinger,[1] have made a clinical analysis of what they call the periodic group of disorders in childhood, covering some but not all of the items in Dr. Lapage's diathesis. Of the 80 cases, three-quarters had history of headache, in only a small proportion of the hemicranial type. Most of them suffered from abdominal pain. Some were occasionally febrile. Several complained of vertigo associated with raised blood pressure, and along with these main groups of symptoms were associated in one or another such diverse complaints as asthma, urticaria, severe limb pains, temporary amaurosis, or psychological manifestations, even to definite epileptic seizures. On the whole, these children were of the slender, fragile, but active type with a significant incidence of rheumatism and chorea in the family history, and in many cases the attacks were accompanied by a moderate degree of ketosis, although the authors were inclined to regard this ketosis as an effect rather than as cause of the disorders. The pathologist will ask whether there is any demonstrable kinship between the different members of this group of periodic disorders. Certainly there is between three or four of them, and they are probably manifestations of central nervous disturbances. But there is a less defined fringe of happenings which led Dr. Wyllie and Dr. Schlesinger to refer to an inherited neurotic constitution, although they are reserved about the influence of heredity in these disorders and their relationship to allergy. We must admit that the subject of constitution and that morbid alteration of it which is called diathesis or dyscrasia, which occupied so much attention in Victorian medicine, is still an untracked region. The constitution, that is to say, the living action and reaction of the body as a whole, is a definite thing, and the constitution of the child is different from that of the adult body. In the child the constitution must pass through a procession of changes from infancy through childhood and adolescence until the more stable constitution of the adult body is reached. In the child, then, constitution is a changing thing. Diathesis in the minds of its disciples is some kind of distortion in the standard make-up. Heredity can obviously play an important part in introducing distortion, but diathesis may also be acquired as a result of injurious influences playing upon the changing constitution of the child.

Dr. Alfred F. Hess, professor of pædiatrics in the University of New York, will deliver the Ingleby lectures in the University of Birmingham on Tuesday and Thursday next at 4 P.M. The subject of the lectures will be Fat-Soluble Vitamins.

THE foundation-stone of the permanent home of the University of London will be laid by His Majesty the King on Monday next with fitting ceremonial. Accommodation has been provided for three thousand people. The King and Queen will be accompanied by an escort of Household Cavalry, and prior to their arrival there will be a procession of teachers and others in academic dress. In connexion with the ceremony dinners will be held for representatives of British and foreign universities and learned societies over the week end; at 9 P.M. on June 26th a reception will be given by the Chairman of the London County Council at the County Hall.

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[1] Brit. Jour. Child. Dis., 1933, xxx., 1.

LONDON HOSPITAL MEDICAL COLLEGE.—On Tuesday next, June 27th, at 3 P.M., in the library of the college, the Very Rev. W. R. Inge, Dean of St. Paul's, will present prizes to successful students.

SPECIAL ARTICLES

MEDICINE AND THE LAW

Silicosis Compensation: the Time Limit

A QUESTION as to compensation for silicosis was dealt with by the Court of Appeal on June 15th (Bacon *v.* A. W. Wills and Sons). The Workmen's Compensation Acts have enabled the Home Office to make schemes for silicosis in various industries, the disease being deemed equivalent to a "personal injury by accident arising out of and in the course of the employment." As an industrial disease may develop gradually and the victim may be employed by different masters during its development, Section 43 of the 1925 Act says that compensation is to be recoverable from the employer who last employed the workman within the 12 months preceding the date of disablement (subject to possible contribution from other earlier employers). The workman who was the appellant in the case under discussion was employed in work which brought him within the Metal Grinding Industries (Silicosis) Scheme of 1927, since superseded by a fresh scheme of 1931. The 1927 Scheme says that no compensation is to be paid if the workman has not been employed in the specified processes "within the three years previous to the date of total disablement." The appellant was at work to a date in 1930. On Sept. 30th, 1932, the medical board certified that he was totally disabled by silicosis as from August 26th, 1932, a date more than two years later than the date of his ceasing to be employed. In order to ascertain the weekly payments for total incapacity the Scheme applied certain sections of the Act of 1925. Section 9, one of the applied sections, says that the payments must be calculated by reference to the workmen's earnings "during the previous twelve months." The Birmingham county court judge held that, as the man had not been employed for the 12 months previous to the date of disablement, there was no means of assessing compensation and therefore the claim must fail. The judge accepted the employers' contention that one had to look at the sections of the Act applied by the Scheme and, when the sections were looked at, one could not get away from the 12 months' limit. The Court of Appeal allowed the workman's appeal. Faced with the difficulty of reconciling the 12-month period in the statute with the three-year period in the Scheme, the Master of the Rolls had recourse to the Latin maxim that a thing must be construed *ut magis valeat quam pereat*; provisions must be made to work rather than to break down. If the Scheme applied Section 9 of the Act, and if Section 9 used the words "the previous 12 months," the words must for the purpose of the Scheme be interpreted as the last 12 months of the employment.

That same evening, as it happened, a question was put to the Home Secretary in the House of Commons concerning a silicosis patient who died on March 21st last but had not worked since February, 1930. Compensation had been refused to his widow and eight children because he had not obtained a certificate from the medical board within the three-year limit. The Under-Secretary explained in reply that the principle of a time limit is recognised by the Act, and that the Home Office is advised that three years is a sufficient period to allow for disability due to silicosis to develop after the cessation of employment. The Home Office, he said, was not prepared to alter the regulations so as to secure compensation for all cases at any period. The case seems a hard one. The advisers of the deceased workman apparently knew that his disability was due to silicosis, but they delayed an application to the medical board until the death made an application unfortunately impossible.

Judge and a Medical Certificate

When complaints of lax certification are proved against the medical profession, they are fortunately more often found due to good nature than to bad faith on the doctor's part. While it is unnecessary to make too much of a single instance, a recent illustration will show the serious trouble which may follow unexpectedly. A doctor who had begun to practise in the present year in a northern town was visited in April by a woman who told him that her husband had had a fit and severe headaches and was unable to get about for an hour or two. The husband had to be at the labour exchange by 10.45 that morning to draw his unemployment insurance money; if nothing was done, the family would have no money for the week. Would the doctor give her a certificate to say her husband was ill, so that she could go herself in his place? The doctor knew it was a hard case. He had not attended the husband or wife, but he knew that they were poor people and that medical treatment was being given to their child through public assistance. He himself never managed to go out on his rounds before 11 A.M.; a visit to the patient could therefore not be managed in time. He wavered. He wrote out one certificate, thought better of it and tore it up. Then it occurred to him he might give the certificate perhaps and go round to the patient early in the afternoon. He signed, but found himself unable to call until two afternoons later. Meanwhile the woman took the certificate away and drew the money. So far all was satisfactory. Two days earlier, however, according to the subsequent verdict of a jury at Cumberland assizes, the husband had committed an indecent assault upon a little girl. When the trial came on, the irregularly signed certificate somehow became evidence. The prosecution alleged that the reason why the man would not go to the labour exchange was not his ill-health but his desire not to appear in public for fear of identification. The judge questioned the accused about the certificate. The doctor had therein certified that the man had been under his care, was suffering from an epileptic fit, and was incapable of following his occupation that day. The judge elicited that the doctor had never seen the patient whose condition he was certifying; he remarked that the document was untrue in two important particulars—the man was not under the doctor's care and had not suffered from an epileptic fit. The judge thought it a serious matter; if the doctor had really visited the patient, his evidence might have been of material help in furthering the course of justice; the giving of this untrue certificate might in certain events have defeated the course of justice. An explanation being demanded, the doctor had to attend the court next day. After the facts had been explained as set forth above, the judge seems to have accepted the explanation and to have observed that no great harm had in fact been done. Without moralising too tediously over the incident, one might repeat that much trouble is saved in the end by a firm refusal to give an irregular certificate in the beginning.

CANCER OF THE SKIN

AN inquiry by Dr. Gretta M. Thomas, undertaken at the instance of the Yorkshire Council of the British Empire Cancer Campaign under the direction of the Faculty of the General Infirmary at Leeds, has been published by the Ministry of Health as No. 70 of the Reports on Public Health and Medical subjects.[1] The report is divided into three sections, of which the first deals with epithelioma of the lip (80 cases); the second with epithelioma of the skin in general (161) and of the penis (76), the scrotum (23), the vulva (33), and the anus (5); and the third with rodent ulcers (122). Appendices consist of interesting tables of the occupations of patients suffering from epithelioma of the various regions. With respect to each type of lesion the ætiological factors and result of operation are first discussed, and notes follow on special pathological, clinical, or statistical features. The conclusions set out below are abridged from the useful summaries which conclude each section :—

EPITHELIOMA OF THE LIP

The following points emerge from the analysis of the cases, the sample available being admittedly small.

The high average age at which male patients presented themselves for operation (62·6 years); the large proportion of patients over 70 years of age (26·3 per cent.) when operated on; the somewhat large proportion of outdoor occupations in the series. Nothing of importance emerges from a study of preceding lesions or other ætiological factors.

The results of treatment of early cases are very satisfactory. The removal of glands at the same time as the growth in early cases shows a net survival-rate of 87·5 per cent. at three years, 80 per cent. at five years, and 60 per cent. at ten years, and in this small sample is distinctly better than the result for early cases treated by local excision only. There is a tendency for recurrent growth to manifest itself five years, or even more, after operation. The small proportions of upper lip cancers in males, and of cancer of either lip in females conform with previous experience.

EPITHELIOMA OF THE SKIN GENERALLY

The average age at operation was 57 years. In males, ear, trunk, and arm are more frequently affected; in females, forehead, circum-oral region, and cheek.

Squamous carcinoma and rodent ulcer have different site distributions. As to the bearing of occupation on the onset of squamous carcinoma, exposure to known carcinogenic irritants occurred in 6·5 per cent. of the cases, and 22 per cent. of cases followed outdoor occupations.

It appears to be not uncommon for epithelioma to arise on the scars of burns or other previous lesions, on unhealed injuries, on chronic ulcers, and on lupus. A large proportion of epithelioma of the face occurring in females was preceded by lupus which had usually been treated by X rays. Moles, warts, and cutaneous horns were frequently found to be precursors of the malignant lesions; usually they had been irritated by trauma. Abnormality of the skin in general, apart from changes caused by exposure to carcinogenic irritants, was exceptional. The mean alleged duration at operation was, for squamous carcinoma, 19·8 months; for epithelioma of the ear it was well above the mean, being 34·2 months. The results of treatment in this series are the results for surgical, not for radiological treatment. The survival-rates at three and five years are for early cases quite satisfactory, much less so at ten years, but the survivals *with freedom from recurrence* are disappointing at three, five, and ten years after operation, even for early cases, being 61·2 per cent. at three years, 53·8 per cent. at five years, and 39·4 per cent. at ten years.

Epithelioma arising in lupus.—The low average age (42·2 years) as compared with that in cancer of the skin not arising on lupus is probably due to the fact that the chronic preceding lesion, lupus, begins at a very early age. The large proportion of patients in whom lupus was treated by X rays is noteworthy and the unsatisfactory prognosis in the treatment of epithelioma arising on lupus compared with that in other skin cancers.

EPITHELIOMA OF THE PENIS

Here again the sample available is small.

The age-incidence is lower than that of cancer of the lip, most patients being under rather than over 60 at the time of operation. No preponderance of definite carcinogenic occupations was noted in the series, as compared, say, with cancer of the scrotum.

In 43·6 per cent. of patients there was a history of phimosis, and in 18·6 per cent. a history of syphilis, but no control series was examined. In no case had circumcision been performed in early life. The mean alleged duration of the disease before operation was 11·5 months. In 57 per cent. of histologically early cases enlarged glands were present, due to sepsis, and not to secondary deposits. The sample is small (12 cases out of 21), but it is held to bear out the general opinion that the inguinal glands are often palpable in cancer of the penis without being invaded by growth. The results of operation in early cases are exceedingly favourable, showing a net survival-rate of 80 per cent. at the end of ten years. Routine treatment by removal of inguinal glands probably gives a slightly more favourable prognosis than simple amputation alone. Cases in which glands were invaded at the time of operation have a much less favourable prognosis (a 42·9 per cent. net survival-rate at the end of ten years) than have the early cases.

EPITHELIOMA OF THE SCROTUM

In the 23 cases of epithelioma of the scrotum a high percentage (60·8) of patients were exposed to known carcinogenic agents in their occupations, mostly tar and pitch. In most of these the carcinogenic substances had caused general skin changes such as keratoses, warts, or desquamation. The average duration of exposure to the carcinogenic agent before the onset of malignancy was high, just over 20 years, in tar workers; in the pitch workers (two cases) the exposure was only two and a half years. The average alleged duration of the disease before operation was 17·1 months. Radical operation gave better results than simple local excision of the growth.

EPITHELIOMA OF THE VULVA

The majority of cases presented themselves for operation after the age of 50, the average being 55·5 years.

Pruritus was an antecedent of fairly long duration in about one-third of the cases, and leukoplakia in nearly the same proportion. Pruritus and leukoplakia were associated in six cases out of nine which showed leukoplakia, but no controls were examined. Two cases only were known to have suffered from venereal disease. The mean alleged duration for operable cases was 11·4 months. The results of operation are fairly satisfactory up to five years, but those at ten years are disappointing, the net survival-rate being only 37·5 per cent. for early cases. In none of the fatal cases was the vulva completely removed. Epithelioma of the vulva tends to give rise to late recurrences, or to recurrences of slow growth without much tendency to form metastases.

RODENT ULCER

The average age on attendance at hospital for rodent ulcer was 57·3 years.

No occupational factor appeared to be of ætiological importance. Scars and preceding skin conditions, such as xeroderma or psoriasis, may be precursors of rodent ulcer. The mean alleged duration of all cases at operation was 5·7 years. Early cases or ulcers of not more than about 1½ in. in extent have a good prognosis when treated surgically, 11–12 per cent. only recurring within a period of ten years from operation.

More extensive growths, even though not involving deep structures, do badly, 66·7 per cent. developing or dying of recurrence within a period of ten years from operation.

Growths involving bone or cartilage do very badly. All such cases die or have recurrence within three years of operative treatment. Of all cases, whatever the stage of the disease, about one-third recur after operative treatment. Multiple growths were definitely known to have occurred in 9 out of 122 cases (7·4 per cent.).

In a prefatory note Sir George Newman says that one of the objectives of the inquiry was an attempt to ascertain whether environmental conditions associated with occupation or industry, other than those already recognised as conducive to skin cancer, lay open to suspicion. The inquiry failed to elicit definite indications, but he points out that certain occupations, mentioned in lists appended to the report, have from time to time fallen under suspicion and require further investigation, and that examination of the national records of deaths has so far failed to suggest that other occupations, apart from those already recognised as concerned with cancer-producing agents, have an undue incidence of skin cancer. Sir George draws attention to many of the deductions

[1] London: H.M. Stationery Office. 1933. Pp. 130. 2s.

which can tentatively be drawn from this report, in spite of the small numbers of cases studied in any one group. The high curability-rate of skin cancer results in its accounting for a low proportion only of the total deaths due to cancer (less than 2·5 per cent. in males and 1·5 per cent. in females). This low proportion has remained remarkably steady over the whole period covered by the national records and, translated into actual deaths, may be stated as rather more than 600 for males and over 400 for females at the present time. Although a small rise in the number of deaths and in the crude death-rate suggests an increased frequency, the steadiness of the standardised rate indicates that this increase is no more than can be accounted for by changes in the age and sex constitution of the population; if an increase which cannot be accounted for in this way has occurred it has been kept in control by the effects of treatment. Further forms of control are still required, notably identification and effective treatment of precancerous lesions, or recognition and counteraction of environmental carcinogenic agencies. It is important not to lose sight of the probability that the total number of sufferers may be expressed numerically as roughly fivefold that of the number of deaths.

These considerations provide a reason, if reason be required, for further investigation of skin cancer; another is found in the analogy between human skin cancers, particularly those due to occupational risks—e.g., contact with tar, mineral oil—and those which can be produced experimentally in animals.

THE ŒSTRUS-PRODUCING HORMONE
INTERNATIONAL STANDARD

IN July of last year a conference was held in London under the auspices of the Permanent Commission on Biological Standardisation of the Health Organisation of the League of Nations, with the object of discussing the possibility of securing international agreement on standards of reference and units of activity for the sex hormones. While the conference agreed that knowledge of the male sex hormone, and of the hormones of the corpus luteum and the anterior posterior body, is at present insufficiently advanced to permit of a standard of reference being established and a unit of activity defined for these substances, important decisions were reached in regard to the œstrus-producing hormone. This hormone has been prepared in pure crystalline form, from the urine of pregnancy, in quantities sufficient to admit of chemical examination; it exists in two forms, a ketohydroxy form and a trihydroxy form, the first-named being the more active, by the ordinary methods of testing, in producing œstrus in animals subjected to oöphorectomy.

The œstrus-producing hormone has been the subject of extensive investigations in recent years, and a state of confusion was developing in consequence of the adoption of different "units." As in the case of other substances exhibiting marked and specific biological activity, attempts to define units in terms of animal reaction had only served to show that units defined on such a basis lacked uniformity; the unit varied not only from one species of animal to another but, in the same species, was dependent upon the method of administration and the method chosen for interpreting the result of the administration of the hormone.

The conference agreed that, as in other similar cases, the only safe basis for international agreement on a unit was the adoption of a standard substance, in terms of which the unit could be defined. The standard adopted by the conference for international use is a quantity of the ketohydroxy form of the hormone in pure crystalline condition which is preserved at the National Institute for Medical Research, London; and the unit of activity is defined as the specific œstrus-producing activity contained in 0·1 γ (=0·0001 mg.) of this standard preparation.

In order to provide an adequate amount of material to serve as an international standard, different countries have sent samples of the pure crystalline ketohydroxy form of the œstrus-producing hormone to the institute, where the final preparation of the standard has been completed and arrangements have been made for the storage of the standard and for its dispatch to the central laboratories and institutions in other countries which have been nominated by the Health Organisation of the League of Nations for local distribution.

Institutions or individual investigators in Great Britain and Ireland requiring the standard for the œstrus-producing hormone should apply to the Department of Biological Standards, the National Institute for Medical Research, Hampstead, London, N.W.3.

THE HEALTH OF SCOTLAND

THE fourth annual report of the Department of Health for Scotland [1] has no outstanding development of the health services to describe, but foreshadows some radical changes which will be necessary before the health policy of the nation can be said to function through the most economical and efficient organisation. The Committee on Local Expenditure (Scotland) recommended an independent inquiry into the whole subject of public health policy from every standpoint. Meanwhile the department has been taking steps in one of the most important directions: coördination with the private practitioner. Representatives of the larger local authorities and the British Medical Association met officers of the department and formed a small committee to pursue the subject, but its activities were suspended in view of the prospective review of the whole matter. Another committee, however, is considering the possibilities of enlisting general practitioners in research work.

The statistics for 1932 are somewhat less favourable than in previous years. The birth-rate of 18·6 per 1000 of population is again the lowest on record. The death-rate was 13·5 compared with 13·26 in 1931. The infant death-rate (under one year) was 86 per 1000 births, although the figure in 1931 was only 82, and the average for the preceding five years was 85. Last year's decline in maternal mortality was not maintained, the rate rising from 5·9 to 6·4 per 1000 births. The incidence of infectious disease was higher, and the death-rate from epidemic diseases rose from 83 to 87 per 100,000 of population. There were increases in scarlet fever, erysipelas, ophthalmia neonatorum, pneumonia (both primary and influenzal), and measles. Diphtheria, typhoid, and whooping-cough, on the other hand, showed decreases, and the tuberculosis death-rate again reached a record low figure of 84 per 100,000 of population.

[1] Edinburgh: H.M. Stationery Office. 1933. Pp. 195. 3s.

Housing.—An encouraging feature of the year's work is the increased output of houses under State-aided schemes; 15,818 houses were completed and 19,732 were under construction. The improvement is likely to be continued in 1933, for another 11,045 houses have been approved. It is now possible to contemplate a definite reorganisation of housing policy so that the efforts of local authorities can be concentrated on clearing slums and rehousing their inhabitants, leaving to private enterprise the function of providing for the normal housing needs of the community. The Town and Country Planning Act for Scotland came into operation on April 1st of this year, and by it local authorities are, for the first time, empowered to replan built areas, preserve objects of natural interest or beauty, and protect existing amenities. The department continues to press local authorities to submit town-planning schemes.

As elsewhere, the chief problems of the department have arisen from the widespread unemployment and need for economy. The year's experience in handling poor relief has reinforced the case for the reform of the Scottish poor-law. Various local authorities have submitted water-drainage and other schemes for the relief of unemployed.

Mothers and Children.—There are no authoritative data from which to draw conclusions on the effect which the prolonged distress is having on mothers and children, but there is some evidence of an increased incidence of rickets among children below school age. The most important causes of neonatal death were congenital and all forms of bronchitis and pneumonia. There are now maternity and child welfare schemes in all Scottish areas except one, but they vary in completeness and in character. The work of ante- and post-natal clinics has developed considerably. The medical inspection scheme for school-children provides an entrance, a leaving, and one intermediate examination. The number of children examined in the routine course during the year was 247,272, and 128,021 children were referred for special examinations. Careful watch is being maintained on the nutrition of children, and on the whole this seems to be well maintained.

The department hopes that hospital services in Scotland will shortly be reorganised with a view to raising the general standard and ensuring coöperation between statutory and voluntary hospital authorities and avoiding overlapping. Several local authorities have already accepted the principle and submitted schemes.

IRELAND

(FROM OUR OWN CORRESPONDENT)

TAXATION OF INCOME FROM A NURSING-HOME

A DECISION of importance to hospitals which conduct private nursing-homes as adjuncts to their charitable institutions was given last week by the Supreme Court of the Irish Free State. The Mater Misericordiæ Hospital, the largest charitable hospital in Dublin, conducts a large private nursing-home attached to the institution. The inspector of taxes claimed income-tax on the profits from the nursing-home, but his claim was rejected by the special commissioners for income-tax, who held that the nursing-home was not carried on as a trade. This decision was rejected by the High Court on appeal by the inspector of taxes, and on further appeal to the Supreme Court the decision of the High Court has been upheld. The case was made for the hospital that the nursing-home was not a separate undertaking from the charitable hospital, and that no separate accounts were kept. This is probably the first instance in Ireland in which a hospital has been made to pay income-tax on the profits of a nursing-home associated with it.

PUBLIC HEALTH SERVICES

Food Poisoning at Muswell Hill

ABOUT 60 cases of food poisoning with one death, of a man of 70, occurred in the Muswell Hill district of London during the week-end of Friday, June 9th, following the consumption of cooked pressed brisket of beef. The unsold meat was surrendered and is being examined by medical officers of the Ministry of Health; and organisms of the Salmonella group have been incriminated. Steps have been taken to guard the public from any further danger. No fresh cases have been reported since Sunday, June 11th, and there are no further casualties. The attack in most cases started with acute abdominal pain and vomiting with some diarrhœa and mild muscular cramps.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 10TH, 1933

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 18 (last week 27); scarlet fever, 1632; diphtheria, 651; enteric fever, 22; acute pneumonia (primary or influenzal), 857; puerperal fever, 27; puerperal pyrexia, 101; cerebro-spinal fever, 26; acute poliomyelitis, 10; acute polio-encephalitis, 2; encephalitis lethargica, 2; continued fever, 1 (Battersea); dysentery, 4; ophthalmia neonatorum, 81. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on June 13th–14th was as follows:—Small-pox, 54 under treatment, none under observation (last week 56 and 0 respectively); scarlet fever, 1616; diphtheria, 1636; enteric fever, 14; measles, 463; whooping-cough, 345; puerperal fever, 20 (plus 6 babies); encephalitis lethargica, 231; poliomyelitis, 1; "other diseases," 262. At St. Margaret's Hospital there were 17 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In 118 great towns, including London, there was no death from small-pox or enteric fever, 35 (3) from measles, 7 (2) from scarlet fever, 16 (3) from whooping-cough, 29 (6) from diphtheria, 38 (11) from diarrhœa and enteritis under 2 years, and 15 (2) from influenza. The figures in parentheses are those for London itself.

Liverpool reported 12 fatal cases of measles, Bradford 3, Birkenhead, Blackburn, Birmingham, and Swansea each 2. Five deaths from diphtheria occurred at Liverpool, 3 at Huddersfield. Liverpool also reported 4 deaths from whooping-cough.

The number of stillbirths notified during the week was 246 (corresponding to a rate of 44 per 1000 total births), including 39 in London.

SANATORIUM AMENITIES.—The Lord Mayor of Birmingham, Councillor E. H. Goodby, recently formally opened an extension of the grounds of Highfield, Droitwich. Highfield is a home established in 1917 by the Birmingham Hospital Saturday Fund to enable sufferers from rheumatic ailments to be treated at the brine baths and to convalesce in a salubrious air. There is accommodation for 80 patients. An acre and a quarter of high land immediately in the rear of the home have been acquired and laid out as a garden, a miniature golf course, and a bowling green.

PANEL AND CONTRACT PRACTICE

Provident Scheme for Middle-class Persons

A CONFERENCE at the British Medical Association House, London, on May 31st on this subject decided that close coöperation between provident schemes and the profession being essential, that under schemes for in-patient treatment any recognised voluntary or council hospital or nursing-home may provide the accommodation. There were, it appeared, various schemes in working order whereby a subscriber, sometimes without an income limit, sometimes with, could obtain in an institution or nursing-home medical services which were defined, but for which extra fees had to be paid for extra services; for example, operations, &c. Sometimes every service was included for the subscription to the scheme, and sometimes a grant in aid was made towards charges on a reduced scale of fees. But there was no general agreement, and after discussion it was agreed to set up a committee "to draft a scheme offering full cover for in-patient hospital or nursing-home services for middle-class persons, giving special consideration to (*a*) income limits; (*b*) maintenance costs; and (*c*) the possibility of establishment of a flat rate or a schedule of fees in respect of the consultant and specialist services to be provided."

There is not at the moment sufficient recognition given to men in rural areas who undertake almost all and every emergency that arises in their practices, and with excellent results, while the provision of treatment in an institution which has a closed staff gives rise to questions. The committees of management are often persuaded personally by the staff that if a patient comes into one of the paying wards for operation it must be done by a member of that staff. If the patient's doctor has experience of the particular work and it is the patient's wish that he should operate it is submitted that it is not the duty of the management to prevent this being done, such veto hampering and discouraging young men who may have held responsible posts already. This aspect of the matter, the meeting thought, might be seriously considered by subcommittees set up to work out provident schemes.

Holidays

An insurance practitioner recently came before a medical service subcommittee because he had gone away for a week's holiday and had closed down his surgery during this period. An insured person complained that he and an officer of the committee went to the surgery and was unable to obtain any reply to ring or knock. The doctor, before the medical service subcommittee, said that he had judged it to be a suitable time to get a rest, as there was nothing urgent needing attention in his practice. He gave the panel patients, who required certificates weekly, the necessary certificates before he went away and as he was only away for a week he could of course give the next certificate when he came back without infringing the certificate rules. He stated that he thought doctors were allowed to go away for seven days without informing the Insurance Committee.

Such absence from home comes under Clause 11 (1) and (2) of the terms of service. Paragraph 1 says: "... all treatment must be given by the practitioner personally except where he is prevented by ... temporary absence from home ..." Paragraph 2 says: "A practitioner shall inform the committee of the nature of any *standing* arrangements which he has made with any other practitioner or practitioners for securing the treatment of his patients in cases where he is unable for any of the causes mentioned above—i.e., absence—to give treatment personally. And he shall not absent himself from his practice for more than one week without first informing the committee of his proposed absence and of the person or persons responsible for conducting his insurance practice during such absence." These paragraphs definitely contemplate rules for the carrying on of an insurance practice when a doctor is away on a definite holiday of more than seven days, but it cannot be held from them as this doctor apparently supposed that he could go away for any period up to seven days without providing anyone to do his work during such absence. The doctor was under contract with his insurance committee to treat any person whose condition required it; if through absence he could not give that treatment personally, then under the regulations a deputy may give the treatment for him. If in the case of his absence from home he has a *standing arrangement* with some local practitioner who has agreed to do such work for him *then* and *only then* must he inform the Insurance Committee of the nature of this arrangement. If an absence from home of more than seven days is contemplated the doctor must inform the Insurance Committee who is to be responsible during the period.

The regulations would be terribly burdensome were it not for the seven days provision, for otherwise it would mean that if a doctor was called away for even the afternoon or one night he would have to inform the committee of every intended absence or he would be breaking the regulations; but when this regulation, with the seven days period mentioned in it, is read in conjunction with the general obligation of the contract to look after all insured persons on a doctor's list, it is not easy to understand how there can be read into it a permission to go away for seven days and leave the whole practice without anyone to look after it. But the practitioner seriously thought he had done no wrong, and an amending regulation might be considered making it clear that if an insurance practitioner does go away, even for a period of less than seven days, he must obtain the services of some qualified practitioner to do his work for him during such absence. This is nowhere definitely stated in the present regulations although it is of course implied.

ESSEX PUBLIC MEDICAL SERVICE.—The annual meeting of this service was held at the Liverpool-street Hotel on June 8th, Dr. C. H. Panting presiding. In presenting the ninth annual report, he pointed out how gratifying it was that the normal advance had received no check in spite of the widespread distress in the county; the increase in the number of subscribers was in fact most marked in those areas where distress was most keen. The total number of subscription books in circulation at the end of 1932, after deducting cancellations, removals, deaths, &c., was 11,487—an increase of 1162 over the previous year. The rural parts of the county not covered by service members was now comparatively small; one of the collectors had a round of 120 miles. The total sum paid out to doctors during the year showed an increase of £1051 over the previous year, and the largest totals collected for individual doctors were: urban, £1112; semi-rural, £274; rural, £534. The statement of account showed a balance of assets over liabilities for the year of nearly £1000. The benevolent fund continued to be useful in assisting subscribers to obtain appliances. The Essex service, Dr. Panting remarked, was the only county service, including boroughs, large towns, urban, semi-rural, and rural districts. Its experience should prove valuable to new centres starting.

CORRESPONDENCE

TREATMENT OF HAY-FEVER BY DESENSITISATION AND WITH ACID

To the Editor of THE LANCET

SIR,—In THE LANCET of June 10th Prof. Beckman, of Milwaukee, advocates the treatment of hay-fever by dilute hydrochloric and nitric acids by the mouth. (Presumably also, this should be good for all the other sensitisation diseases, for there is nothing in such treatment which should make it special for any one of them.) He animadverts on the desensitisation work in hay-fever of people whom he pillories as "allergists." Now "allergy," which is a stupidly equivocal word, can only be used here, I think, as a collective name for a set of phenomena which are splendidly exemplified in hay-fever and are known to all persons well-informed on the subject; they must be known to Dr. Beckman, who is therefore just as much an "allergist" as I am—just as we are, doubtless, both of us "blood-circulationists."

Dr. Beckman, in comparing results by statistics, makes good fun of the attempts of desensitisation workers to deal with their all but insurmountable variables—different workers, changing methods, different degrees of sensitisation, multiplicity of sensitisations, and so forth; he then justifies the empirical administration of inorganic acids by statistics chiefly compiled from reports of physicians "who have been sufficiently interested to study their cases carefully." Incidentally he claims that 2 to 3 per cent. of cases treated by desensitisation methods are made worse; I do not think I have met such cases personally and certainly not in recent years, but if I solemnly inoculated a hundred hay-fever patients with normal saline I should expect at least three to report that they had been made much worse, and presumably an equal number would report that they had been made much better.

But desensitisation in hay-fever is not empirical. To my mind it is the logical line of treatment in a sensitisation disease; and that it can be achieved is proved not by statistics but by as near to a crucial experiment as one can get in therapeutics. Persistent inoculation will diminish and then abolish that extraordinarily accurate skin reaction which is diagnostic of hay-fever; it will do this as surely as 606 or N.A.B. will abolish the Wassermann reaction of syphilis. (Perhaps I should explain that from the point of view of the pathologist all these diagnostic reactions should be regarded not as signs sent from Heaven to help diagnosis but as indications of the presence of essential parts of the diseases in question.) Abolition of skin reactions can easily be recorded and they coincide with abolition of the symptoms of hay-fever.

Dr. Beckman reports me as waiting for hay-fever symptoms to begin in my patients and then "hospitalising" them by a Rush Treatment of a few days. It is the patients, not I, that wait for the symptoms; perhaps about 5 per cent. of successfully treated patients this year have adopted this rush method because circumstances have made that the most convenient or possibly the only method available. It is in fact a useful method to have up one's sleeve; but its chief significance to us here is the dramatic change produced in a few days—again an almost crucial experiment.

From the point of view of treatment, what I really regard "with increasing satisfaction" are the dozens of patients both in hospital and in private practice who have achieved desensitisation by inoculating themselves. Dr. Beckman says this is not advisable; let us clear our minds of cant and admit that a suitably selected person can inoculate himself perfectly well—as insulin has proved. By rigorous simplification and debunking of technique self-inoculation can take a place in the bedroom routine similar to that of cleaning the teeth.

And now let me freely admit what must be fairly obvious; in hay-fever, as in all immunological problems, there are vast areas still to be explored: new ways will be found, old tracks made easier, and what is to-day obscure will be made clear. If Dr. Beckman with his empirical use of simple inorganic acids has hit upon an important factor in the problem it is very welcome—and very wonderful. I am not impressed by the statistics and, as you say in your annotation, his acid-base imbalance suggestion hardly seems to hold water. He states that "the very straitened circumstances of many patients in this country has caused physicians to turn a kindly ear towards those who can offer in any department of therapeutics a remedy that is at once simple, effective, and inexpensive." This is true, but it suggests not enthusiasm, I think, but the need for caution in exploiting the "kindly ear."

I am, Sir, yours faithfully,

Devonshire-place, W., June 18th, 1933. JOHN FREEMAN.

THE TREATMENT OF ACUTE APPENDICITIS

To the Editor of THE LANCET

SIR,—I read with much interest the letter by my friend and colleague, Mr. R. A. Ramsay, in your current issue, and I am grateful to Mr. Ramsay for raising certain criticisms which are frequently levelled at the exponents of expectant treatment.

I confess that I do not understand Mr. Ramsay when he says of himself: "that it is my practice, except in obviously subsiding cases, to operate as soon as possible after diagnosis has been made, and that neither I nor my patients have ever had reason to regret such a procedure." This can hardly mean that with his large experience Mr. Ramsay has never had a fatality in any case of acute appendicitis? In all series of cases there is surely a definite mortality; our duty is to reduce this to as small a proportion as possible. Mr. Ramsay's statement suggests that in his fatal cases he has not regretted immediate operation because he believes this to be the correct treatment. But what of the patient? One can only presume that the latter does not register regret because, having succumbed, he is incapable of doing so. This lack of regret appears to substantiate the remark in my article: "if the appendix is immediately removed and the patient succumbs, the general impression is that because immediate operation was performed everything possible was done, and the fatality is accepted philosophically."

I entirely agree with Mr. Ramsay's statement that he "would leave severely alone" cases in which congestion and turgidity of the bowel and omentum, and friability of tissues are present, but in cases of recent local peritonitis these are the usual pathological processes to be found at operation. Surely the obvious way to leave these tissues severely alone is not to meddle with them but to apply fomentations and await events? In many cases if immediate operation is performed the "perityphlitis" is not adherent to the anterior abdominal wall, and a tube inserted to "let out pus" traverses the so far

uninfected peritoneal cavity. It might also be noted that in 65 per cent. of cases resolution occurs without suppuration. It appears that some surgeons regard pus in the lower abdomen or pelvis as a calamity, and that tubes must be inserted in order to evacuate pus already present, or which may subsequently form. I should like to repeat that I am in entire accordance with H. H. Rayner who states, regarding the local peritonitis surrounding an appendix, "if the mass becomes converted into an abscess the patient has gained rather than lost by the delay." Even if an abscess does form, in the majority of cases it is uneventfully absorbed without unnecessary interference.

I am afraid Mr. Ramsay is putting words into my mouth when he suggests that I imply that "immediate operators are crude and clumsy craftsmen." On the contrary, I would assert that they are probably better craftsmen than those who follow expectant treatment, as they have a larger experience of difficult cases. Appendicectomy may be one of the most difficult operations in surgery, as is well illustrated in the dramatic tale of "The Tenth Appendix" by Sir Frederick Treves. However, mere craftsmanship is of secondary importance to a true appreciation of pathological processes. If patience and faith in the resistance of the peritoneum to infection were exercised, particularly from the third to the sixth days (vide article by Herbert A. Brown in the current number of the *Clinical Journal*), many surgeons who do not try, but only decry expectant treatment of acute appendicitis, would be pleasurably surprised with the results.—I am, Sir, yours faithfully,

London, W., June 17th, 1933. R. J. McNEILL LOVE.

THE MISAPPLICATION OF ARTIFICIAL PNEUMOTHORAX

To the Editor of THE LANCET

SIR,—With reference to the letter from Dr. Batty Shaw in your issue of June 10th, may I be allowed a few words in defence of at least one sanatorium? At this sanatorium both pulmonary and non-pulmonary cases are treated. In assessing the relative value of the methods used to treat the cases of bone and joint tuberculosis, it is fair to say that 50 per cent. of benefit is derived from an open air régime with sunlight and 50 per cent. from splintage and operative procedures. In the case of active joint tuberculosis it is rare to obtain a satisfactory result, however efficient the splintage, if the child is treated in a city hospital. Those who have seen cases treated in city hospitals will not need to be convinced. To others the large numbers of country hospitals for the treatment of non-pulmonary tuberculosis which have been established in all countries bear testimony to what is now an established fact. This being so, is it not rational to assume that, having splinted a tuberculous lung by artificial pneumothorax, the disease is more likely to be arrested if the patient is treated in a country hospital, not indeed by graduated exercise, but by rest under conditions best calculated to raise the patient's resistance? Rest under these conditions is sufficient to heal a small percentage of cases without pneumothorax. In a much larger percentage collapse of the diseased lung will give the patient his only chance. From the experience gained in the treatment of non-pulmonary tuberculosis, there is no reason to doubt that this chance would be much more substantial if treatment is carried out in a country hospital.

I am, Sir, yours faithfully,

M. C. WILKINSON, M.B., B.S.

Essex County Sanatorium, Black Notley, June 14th, 1933.

MEASURING A HEALING ULCER

To the Editor of THE LANCET

SIR,—If Dr. Pether instead of plotting the areas of the healing ulcer at a definite interval of time will plot the logarithms of those areas he will find that their curve is a straight line, and this line has only to be produced to cut the base line to give the date when the ulcer should be healed. For example: a healing ulcer has an area of 5 square inches: after seven days it is only 4 square inches. When may it be expected to heal? Taking logarithms:—

Log 5	= 0·6990
Log 4	= 0·6021
Difference.. ..	0·0969

This difference should be constant week after week, and divided into 0·6990 gives a quotient of 7·2, the number of weeks that the ulcer will take to heal from the first measurement. Incidentally at the end of two weeks we should expect the area to be 3·2 square inches, at the end of three weeks 2·56.

I have tested this method in actual cases and found it approximately correct; and it was used in some of the general hospitals during the war, in the case of wounds healing steadily under Carrel-Dakin treatment.—I am, Sir, yours faithfully,

Lincoln, June 16th, 1933. W. H. B. BROOK.

HOSPITALISATION OF SCARLET FEVER

To the Editor of THE LANCET

SIR,—The doubts thrown on the value of isolation in scarlatina which you discuss in your leading article on June 10th are supported by recent observations made in Scandinavia. P. M. Holst[1] produces statistical and other evidence to show that the benefits of isolating cases not only of scarlatina but also of diphtheria are largely, if not wholly, illusory. What does much to render this measure nugatory is the unlimited number of carriers. In the case of diphtheria the hue and cry after carriers a few years ago has died out on account of the imposing numbers found. Doubtless the same discovery would have been made in the case of scarlet fever could any one germ have been identified as its cause. As it is, the number of healthy scarlatinal carriers is assuredly prodigious, though the estimate thereof must depend on pure fantasy. At the present time in Norway school-children in a home in which diphtheria has broken out are kept away from school for some days after the patient has been isolated. This is done in order that children in the incubation stage of the disease shall not come to school suffering from it, and also—the main reason—to reassure public opinion which expects something to be done. Holst reproduces graphs showing the incidence of diphtheria and scarlatina in Oslo and Bergen during many years. These graphs suggest that both diseases have been blissfully independent of the attempts, made in the early part of the period under review, to isolate cases. It has been argued that isolation has, at any rate, helped to reduce the mortality from scarlet fever by virtue of the alleged control of the most pathognomic strains of the virus of scarlet fever. But Norwegian statistics give no support to this hypothesis; changes in the mortality from scarlet fever have been too abrupt to be credited to the account of isolation. In 1907 the town of Trondheim almost completely gave up the isolation of cases of scarlet fever, and during the following years there was no marked change in the morbidity. Bergen followed

[1] Tidsskr. f. d. Norske Laegeforening, May 1st, 1933, p. 479.

suit in 1909, and during the following years the morbidity curve of scarlet fever behaved as independently as ever, with an almost record low level from 1912 to 1921. Holst concludes his criticism of isolation with the verdict: "That measure of which we once expected so much has utterly failed us."

I am, Sir, yours faithfully,

June 20th, 1933. CLAUDE LILLINGSTON.

STIPPLING OF RED BLOOD-CELLS

To the Editor of THE LANCET

SIR,—The excellent paper of Dr. Britton and Dr. Whitby will, I hope, convince those who still need convincing that the mere presence of a stippled cell in *a film stained by an alkaline methylene-blue stain* is not necessarily evidence of lead poisoning. The writers have shown quite conclusively that the stain employed is all important in determining the magnitude of the "punctate count" in any film, and their findings furnish an explanation for the fact I noted (Jour. Indust. Hyg., October, 1931) that among over 200 controls varying mild degrees of punctate basophilia were present when the films were stained by an alkaline methylene-blue. It is therefore important that hæmatologists using this stain when examining films from lead workers should compare the counts so obtained with normals stained in a similar way and not with normals stained by one of the Romanowsky stains.

I am, Sir, yours faithfully,

Manchester, June 20th, 1933. RONALD E. LANE.

THE SERVICES

Indian Medical Service: Annual Dinner

MORE than a hundred officers of the Indian Medical Service sat down to dinner at the Trocadero, London, on June 14th, under the chairmanship of Air Vice-Marshall Sir David Munro, C.I.E., a former member of that Service. There were present as guests Sir Findlater Stuart, K.C.I.E., C.S.I., Major-General S. F. Muspratt, C.S.I., C.I.E., Mr. F. H. Brown, C.I.E., the *Times* correspondent for India and the East, Dr. N. G. Horner (*British Medical Journal*), and Dr. Egbert Morland (*The Lancet*). Six officers on probation—Capt. W. J. Moody, Lieut. A. D. Andreason, Lieut. M. E. Kirwan, Lieut. M. S. Purvis, Lieut. B. A. Porrit, Lieut. D. K. L. Lindsay—attended by invitation. The other members of the Service present were as follows:—

Major-Generals: Sir Havelock Charles, Bart., G.C.V.O., K.C.S.I.; Sir Leonard Rogers, K.C.S.I., C.I.E., F.R.S.; W. V. Coppinger, C.I.E., D.S.O.

Colonels: H. Ainsworth; J. Anderson, C.I.E.; R. F. Baird; L. P. Brassy; J. P. Cameron, C.S.I., C.I.E., V.H.S.; Sir Samuel Christophers, C.I.E., D.S.O., F.R.S.; Sir Frank Connor, D.S.O.; A. B. Fry, C.B., C.I.E., D.S.O.; T. A. Granger, C.M.G.; C. R. M. Green; W. H. Leonard, C.B., K.H.P.; Sir Robert McCarrison, C.I.E., K.H.P., K.I.H.; F. P. Mackie, C.S.I., O.B.E.; W. O'S. Murphy; A. J. Macnab, C.B., C.M.G.; C. W. F. Melville, K.H.P.; Sir Richard Needham, C.I.E., D.S.O.; J. J. Pratt; H. E. Stanger-Leathes, K.H.S.; C. N. C. Wimberley, C.M.G.

Lieut-Colonels: H. P. Cook; A. G. Coullie; D. Coutts; D. G. Crawford; J. M. Crawford, O.B.E.; J. T. Calvert, C.I.E.; Hunter Dalzell, O.B.E.; I. Davenport Jones; H. R. Dutton, C.I.E.; R. H. Elliot; J. K. S. Fleming, C.B.E.; G. F. Graham; V. B. Green-Armytage; A. E. Grisewood; A. F. Hamilton, C.I.E.; W. G. Hamilton; J. B. Hanafin, C.I.E.; E. V. Hugo, C.M.G.; M. L. C. Irvine; S. P. James; S. Whitworth Jones, O.B.E.; J. C. H. Leicester, C.I.E.; V. M. Mackenzie, V.H.S.; A. C. A. McNeight; E. C. G. Maddock, C.I.E.; F. O. N. Mell, C.I.E.; P. S. Mills; T. R. Mulroney; J. H. Murray, C.I.E.; F. O'Kinealy, C.V.O., C.I.E.; J. Robertson, I.S.O.; H. Ross, C.I.E., O.B.E.; H. K. Rowntree, M.C.; A. J. H. Russell, C.B.E.; R. Steen; G. M. C. Smith, C.M.G.; W. D. H. Stevenson, C.I.E.; Ashton Street; W. A. Sykes, D.S.O.; G. S. Thomson; E. O. Thurston; R. G. Turner, C.M.G., D.S.O.; S. S. Vazifdar; R. T. Wells; E. L. Ward, C.B.E.; R. E. Wright, C.I.E.

Majors: D. P. Bhargava; H. C. Brown, C.I.E.; F. M. Collins; G. Covell; W. H. Crighton; W. E. R. Dimond; A. J. D'Souza, M.C.; H. H. Elliot, M.B.E., M.C.; Sir T. Carey Evans, M.C.; A. H. Harty; N. S. Jatar; A. V. Lopes; J. G. McCann; S. R. Prall; C. G. Seymour; B. Z. Shah.

Captains: Deva Dutt; D. T. Lambert; S. M. K. Mallick; E. G. Montgomery; T. B. Pahlajani.

The toast of "The King-Emperor" was proposed by the chairman, and then that of "The Service." Sir David recalled many of his early experiences in India, and made it clear to his hearers that quite a substantial part of his heart was still there. He laid special emphasis on the variety of work and experience open in the past and now to members of the I.M.S. Sir Leonard Rogers, in proposing "The Chairman," said that for the first time for a decade the entries to the Service had covered the outgoings. It was evident, he added, that the I.M.S. was attracting men of standing and distinction. Colonel Anderson proposed "The Secretaries," and told the expected stories. Colonel Granger and Sir T. Carey Evans both replied, the latter alluding to the loss since their last meeting of Sir Ronald Ross and Colonel Alcock, both Fellows of the Royal Society.

COMMISSIONS IN THE R.A.M.C.

The War Office announces that 25 permanent commissions in the Royal Army Medical Corps are being offered to qualified medical practitioners, under 28 years of age, registered under the Medical Acts. There will be no entrance examination, but candidates will be required to present themselves in London for interview and physical examination on July 27th. Applications should reach the War Office not later than July 21st. The conditions of service and emoluments were outlined in our advertisement columns last week, and further information may be had either by letter or in person from the Assistant Director-General, Army Medical Services, The War Office, London, S.W.1.

ROYAL NAVAL MEDICAL SERVICE

Surg. Lt.-Comdrs. to be Surg. Comdrs.: T. Madill, J. F. H. Gaussen, and M. Brown.

Surg. Lt.-Comdr. (D) B. J. Geekie is placed on retd. list with rank of Surg. Comdr. (D).

C. V. Harries and R. M. Bremner to be Surg. Lts.

ROYAL ARMY MEDICAL CORPS

Maj. G. H. Stack, from half-pay list, retires on retd. pay.

Lt. H. T. Chiswell (temp. commn.) to be Capt.

ARMY DENTAL CORPS

Capt. W. L. Pearson to be Maj.

RESERVE OF OFFICERS

Lt.-Col. E. T. Potts, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY RESERVE OF OFFICERS

Maj. T. C. Clarke, having attained the age limit, relinquishes his commission and retains his rank.

INDIAN MEDICAL SERVICE

Lt.-Col. (Bt. Col.) C. A. Gill to be Col.

Capt. (on prob.) E. O'Reilly relinquishes his prob. appt.

Capt. A. N. Malhotra relinquishes his temp. commn.

Lal Singh Anand, the relinquishment of whose temp. commn. has been notified, is granted the hon. rank of Capt.

ROYAL AIR FORCE

Flight.-Lt. W. J. Cotter relinquishes his temporary commission on completion of duty.

OBITUARY

NORMAN ELLIOTT ALDRIDGE, M.B. Edin.

Dr. Norman Aldridge, who died on June 15th at the age of 71, was a son of the late J. H. Aldridge, M.D., of Southampton, and came of an old Hampshire family. He graduated in medicine at Edinburgh in 1884, and entered upon general practice in Southampton. In 1896, however, soon after the discovery of X rays, he began to work at radiology and electrotherapeutics, and a few years later he devoted himself entirely to this branch of medicine. Having already been elected honorary physician to the Royal South Hants and Southampton Hospital in 1893, he was given charge of the radiotherapeutic department at its inception, and held this appointment until 1929, when he retired as senior physician. His work is commemorated in the name of one of the new wards of the hospital. Dr. Aldridge was also for some years radiographer to the Hants County Hospital, Winchester, and to the Southampton Infirmary. During the war he held a major's commission, and was at first radiographer to the Royal Victoria Hospital at Netley and the Auxiliary Military Hospital at Southampton, and later inspector of radiography, Southern Command. It was at this time that he contracted an X ray dermatitis of both hands which gradually extended until, in spite of more than one operation, he became completely crippled, and had to give up practice. On his retirement he went to live at Alton.

In his early years Norman Aldridge played back for the Edinburgh University Rugby team and also for the Trojans Club. He was keen and competent in small yacht sailing in the Solent and Southampton Water, and was among the pioneers of motoring. He married in 1893 Margaret Anna, daughter of Joseph Beckton, of Didsbury, and leaves three sons and two daughters.

THE LATE SIR WALTER FLETCHER

SINCE the publication last week of our obituary notice of Sir Walter Fletcher we have received the following appreciation from Dr. Mervyn Gordon: "Walter Fletcher was endowed with so many brilliant qualities, and his character was so subtle and winning that it is impossible to convey an adequate idea of the influence he had on his contemporaries engaged in medical research. Here was a man who understood instantly, made valuable suggestions, was zealous to help, and that not by fits and starts but as a matter of course. He was a man who appeared to be specially created for the purpose of furthering the advance of knowledge the urgent need of which is so deeply realised by the more thoughtful followers of medicine at the present time. And when, as so often happens, the most carefully planned and laboriously executed research work proved a disappointment, nobody could be more kind, generous, and courageous: for Fletcher was a man of immense courage as well as sympathy, tact, and understanding. A gift which he possessed in supreme degree was his rare capacity for literary arrangement and expression. He would take a somewhat dull and involved report of a bit of research work, and by his savoir faire, command of the English language, and a genius for finding the right word, including sometimes the invention of a new and more accurate one, he would make that report into something that would bring out all the points far more clearly and deftly and thus demonstrate to the investigator that a synthetic editor is one of the greatest of God's blessings. It was this great gift for expression that was so valuable to his council and the nation for the purpose of conveying to members of Parliament and others an improved understanding of the aims and some of the achievements of medical research.

"Medical research workers in this country owe Walter Fletcher a debt they can never repay, because from the start of the Research Council he set himself to raise their status and the appreciation of their work. In both of these tasks his efforts were continuous, and his zeal intense: being human he made mistakes sometimes, and the course was not always a smooth one, but nobody can deny to-day that his efforts in both directions have been crowned with success. It was this thought that was of special comfort to him at the onset of his final illness."

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Hospital Bills

IN the House of Lords on Thursday, June 15th, the Aberdeen Royal Infirmary and Mental Hospital Order Confirmation Bill and the Victoria Infirmary of Glasgow Act, 1888 (Amendment), Order Confirmation Bill passed through the report stage.

Unemployment and Public Health

In the House of Commons on Wednesday, June 14th, Sir HENRY BETTERTON (Minister of Labour), in moving the second reading of the Unemployment Insurance (Expiring Enactments) Bill, said that the object of the measure was to extend for a year the Unemployment Insurance Act of 1930 and Sections 1 and 2 of the Anomalies Act of 1931. The effect of extending the Act of 1930 was automatically to extend the Transitional Payments Prolongation Act of 1932, and also the Determination of Need Act, 1932. The Determination of Need Act secured 50 per cent. of disability pension and 50 per cent. of workmen's compensation, and made certain provisions with regard to the amount of savings which were to be taken into account. If the House refused a second reading to the present Bill transitional payments to those persons who had not 30 contributions to their credit in the last two years would automatically cease at the end of June, and this would affect at least 750,000 people. Moreover, the statutory protection in regard to disability pensions and workmen's compensation and savings would also cease. In addition, the protection against the evils dealt with under the Anomalies Act would no longer be effective. Another result would be that the adult dependents benefit, which was now 8*s*. a week, would automatically become 7*s*. a week, and the power of the insurance officer to disallow a claim would be revived. Among other effects of rejecting this Bill would be the revival of the genuinely seeking work clause and the provision for approved courses for juveniles would go. The charge for maintaining something like 750,000 persons would become a local instead of a national charge.

It was estimated that to provide transitional payments for those who had not 30 contributions to their credit, and who but for this Bill would get no transitional payments at all after June 30th, would cost £30,000,000 in a full year and £22,500,000 in the current year. He would remind the House that six years ago—in 1928–29—the expenditure

for insurance benefit and transitional payments amounted in the aggregate to £52,700,000, of which the Exchequer's share was £11,600,000. To-day the expenditure was £115,800,000, of which the Exchequer's contribution was £76,500,000. In those circumstances he did not propose to argue the principle of the means test. But the Order in Council did not disentitle a single individual to assistance, if it was shown that he was in need of that assistance. The insurance scheme could only meet its ordinary obligations to unemployed persons because no less than 40 per cent. of the insured persons never claimed benefit at all. In his view the recent report which he called for on the administration of the Durham commissioners was a justification of his action in appointing the commissioners and a justification of their administration. He was satisfied that the commissioners were carrying out their duties humanely and with a proper regard to their responsibility. He regretted that he was not in a position that day to submit comprehensive proposals for dealing with the whole of the matters affecting unemployment insurance. The reason was that the more one looked into this matter the more complex the problem appeared. What the Government were determined to do, if they could, was to found a system which would stand the test of time. As had already been announced by the Minister of Health, the Government proposed to introduce this Session a Bill dealing on a national basis with the problem of assistance in respect of unemployment. It had been decided that the Government should accept responsibility for assisting all the able-bodied unemployed who needed assistance, and that would involve an adjustment of the financial relations between the State and the local authorities. Any scheme dealing with unemployment insurance must be placed on a sound financial basis. For nearly two years the administration of the scheme had devolved on local authorities, and the Government felt that they owed a debt of gratitude to the local authorities for the way in which they had shouldered this heavy and difficult task. With very few exceptions that task had been faithfully undertaken by the local authorities. But it was difficult as a permanent arrangement to have a system under which the Exchequer found the whole of the money and the local authorities assessed the need. For several months past he had been considering whether it was really justifiable any longer to treat persons, like agricultural labourers and unemployed railwaymen, who needed relief, in a different manner from those who were in insured trades. It would be in accordance with the announcement of the Minister of Health that a scheme of unemployment assistance according to need should cover such persons.

Mr. LAWSON moved the following amendment:

"Whilst realising the necessity for continuing certain temporary provisions in the Unemployment Insurance Acts, this House cannot assent to the Second Reading of a Bill which fails to remove the injustice inflicted by the reductions in benefits and the imposition of a means test, and continues in force provisions with regard to certain anomalies which have the effect of depriving many unemployed persons of their right to benefit."

He said that the Government with their majority and the time at their disposal had been in office for two years, and the net result of all their work was that the great mass of unemployed were in an infinitely worse position than ever before. There was want and misery on a scale never before known by the British working class in the history of this country. The Parliamentary Secretary to the Ministry of Labour had told the House that the needs test had meant a saving of £20,500,000 since the Government came into office. In 1932 the Government estimated that the needs test was saving £15,000,000 a year. The original Government estimate was £10,000,000. There had been taken from the unemployed, by way of reduction of benefits, £12,500,000 a year owing to the 10 per cent. cut. That meant that the unemployed had suffered a reduction during the last two years of £55,000,000. It was time that the House looked into the result of that kind of policy. He thought that on a moderate estimate the total number of people affected by this reduction was between 9,000,000 and 10,000,000, or about a quarter of the population of the country. What had been most striking had been some of the evidence coming from medical quarters as to the physical condition of the people. He had in his possession a recent copy of THE LANCET in which reference was made to areas where there had been protracted unemployment. Dr. Mackay, writing to THE LANCET, said:

"From impressions gained in the out-patient department of the Queen's Hospital for Children, I personally have no doubt that the health of East End mothers is worse now than a year or two back. . . . Those of us who work in such hospitals are well aware that in times of stringency the mother is always the first to go short of the essentials of an adequate diet."

Anyone who knew anything about public health knew that attention was drawn some months ago to a statement by Dr. Smith, head of the Dispensary at Newcastle-on-Tyne. Dr. Smith said: "The misery and distress among the sick poor of Newcastle is still appalling." Dr. Smith was at the head of a dispensary run by a committee who represented no parties, but only that good nature and fine feeling characteristic of the best type of citizens. So much notice was taken of the matter that Dr. Smith and his assistants began to make an examination of the reason for the condition of many of the mothers who came to see them. They investigated the causes of the physical defects and the incomes of the people. He (Mr. Lawson) had a statement regarding the examination of 230 cases, of which 125 were persons living on less than 3*s*. a week for food. There was no doubt whatever that mothers and also fathers punished themselves to give the children food and clothes. Attention had been drawn to an appalling statement by Dr. M'Gonigle of Stockton-on-Tees. Families had been taken out of an old slum area and put into new council houses. There were 700 people concerned. The death-rate was so astounding that the authorities were compelled to investigate the causes. The death-rate in the riverside area, the old area, had actually gone down on the whole, but in the new area it had increased by about 8 per cent. and was much higher than the national rate. Investigation had showed that the reason was that owing to the increased rents the people had less to spend on themselves.

Mr. GRAHAM WHITE said he could give the House examples of a similar nature to those quoted by Mr. Lawson as to the serious hardships which were being suffered by the unemployed. His knowledge did not enable him to say how general or how far spread they might be, but that they existed there was no question whatever. They arose, he thought, from the fact that all sorts of claims and liabilities fell on individual families which it was impossible for any rigid system to take into account. But he thought that Mr. Lawson had gone a little too far in stating that the lot of the working class was harder and worse to-day than it had been at any time in our history. If the hon. Member would study the report of the Poor-law Commission for 1834 he would see depicted there a state of things which would make him thankful that he was living even in the present time. He (Mr. Graham White) was not convinced with the arguments of Sir H. Betterton for the postponement of the major measure for dealing with unemployment insurance, which the House had hoped to have long before this. It was clear that the establishment of a comprehensive scheme of help for the unemployed which would be acceptable to the nation was urgently needed, and was the most important domestic legislation that the Government was called upon to deal with.

Dr. O'DONOVAN said he was in a considerable measure of agreement with the view that all of them were in some form responsible towards the

unemployed. They could only measure that responsibility by a means test; otherwise the responsibility was a burden so heavy that one would push it aside out of sheer terror. Whatever they might say in that House in the way of abstract principle, and in the form of party propaganda, when they got down to brass tacks they had to consider whether the £22,500,000, which would be spent under this Bill in the current financial year, would be well and humanely distributed. He could give his personal testimony that in his constituency (Mile End) he had received, in the last two years, neither a verbal nor a written complaint of inhumane or bad administration by the officials of the Ministry of Labour.

Mr. MACMILLAN said that Mr. Lawson had referred to his (Mr. Macmillan's) constituency of Stockton-on-Tees, where the medical officer of health had suggested that the bad condition of certain families who had been removed from a slum area to council houses was due to the increased rents charged. The town council had met that matter by a general reduction of rents in the district.

The debate was adjourned.

On Friday, June 16th, the debate on the second reading of the Bill was resumed.

Mr. DAGGAR said that the Government had not only reduced unemployment benefits, but had reduced the periods for which benefits were payable, had increased contributions, imposed the means test, for which there could be no defence, and according to their own statement had robbed the unemployed of £29,500,000 in 12 months. The Minister of Health had said that the children of the unemployed had not unduly suffered from the cuts in benefit, but THE LANCET had stated, on the authority of four experts, that the minimum subsistence diet per week for a man cost from 4*s*. 10*d*. to 6*s*. 8*d*., the average of the four figures being 5*s*. 8*d*., and if the amount which was essential in the opinion of THE LANCET were spent on food by an unemployed man, who, with a wife and four children received £1 11*s*. 3*d*. per week, there would be 2*s*. 3*d*. a week for rent, fuel, light, insurances, books, and clothes for six persons. No one in that House could say that the amount given in THE LANCET was available for food. The hon. Member quoted a case of a father, mother, and three children in Yorkshire with an income from transitional benefit of £1 9*s*. 2*d*. per week. After payment of rent, coal and gas, clothing, insurance, &c., 13*s*. 8*d*., or an average of about 2*s*. 8*d*. per person, was left for food. In another case, in Glamorgan, a man, his wife, and five children had £1 11*s*. 3*d*. transitional benefit, and of this, after paying rent, coal and light, clothing, insurance, and cleaning materials, 11*s*. 7*d*., or 1*s*. 8*d*. per person, was left for food. Members of the House could multiply such cases by hundreds of thousands, and it was certain that there was considerable suffering and privation among the children of the unemployed.

Mr. R. S. HUDSON (Parliamentary Secretary to the Ministry of Labour), replying to the debate, said that it was the extravagance of the Labour party in office which caused an increase in unemployment and a reduction in the standard of living, and that the husbanding of national resources by the present Government was gradually improving the situation. (Cheers.)

The amendment was rejected by 212 votes to 29, and the Bill was then read a second time.

Pharmacy and Poisons Bill

On the motion for the third reading of the Pharmacy and Poisons Bill in the House of Commons on Thursday, June 15th,

Mr. G. HALL said he thought that once the public realised what was being done by the Bill, especially in Part II., which dealt with the dispensing and distribution of poisons, they would look upon the measure with a certain amount of dismay. The proposal of the Bill was to increase instead of restrict the sale of poisons. He thought that the contrary ought to be the case. Traders, such as ironmongers and grocers, would be permitted to sell certain very obnoxious poisons. There must be some 10,000 pharmacists in the country, and one would have imagined that they would have been able to provide all the facilities necessary for the sale of poisons. He thought that there was a possibility of wholesale abuse unless the Home Office regarded this Bill with a good deal of concern.

Sir W. SUGDEN said that the Bill set up a very select Board to assist in inspecting, organising, and making regulations for the proper sale and supply of medicines and drugs in a way that would be safe for the public. He would like Mr. Hall to visualise some of the little grocers' shops in some of the scattered villages where, for example, a child came in and got a pennyworth of sweets. The hand that went into the bottle to get the sweets might the next moment have to deal with weed killer containing poison. Under this Bill that would be impossible. While there were certain features of the Bill he would have preferred to see improved, he thought that on the whole they had much to thank the Government for in bringing forward a practical and helpful measure which would raise the standard of efficiency of the pharmaceutical chemist still higher than it was at present, and would help the medical profession as well as veterinary surgeons.

Mr. HACKING (Under-Secretary to the Home Office) said that the Bill would certainly increase the facilities for the purchase of certain dangerous substances, but the substances which would be placed in either Part I. or Part II. of the Bill would be decided by the Poisons Board, and it was clear that they, with all their experience, would not put really dangerous substances into Part II., but would retain them in Part I. to be dealt with by experienced chemists. This Bill had been before the country for a considerable period. It met with the general approval of all persons concerned directly and indirectly in the sale of poisonous substances.

The Bill was read the third time and passed.

Hospitals and the Oil Duty

In the House of Commons on Monday, June 19th, the Finance Bill was considered on Report.

On Clause 6 (Amendments as to duty on hydrocarbon oils),

Captain FRASER moved an amendment providing that where any oil, other than light oil, was used as a fuel in any voluntary hospital for the sick poor, equipped prior to April 25th, 1933, with apparatus especially designed for the use of such oil, the rate of rebate should continue to be 8*d*. a gallon. In London there was a small number of hospitals using oil, and if they were compelled to pay this tax it would cost them about £12,000 a year. In the provinces the figure would be about £8000, so that the total cost of this concession would be about £20,000 a year. That was a very small sum to the Chancellor of the Exchequer, but it meant a good deal to the hospitals, about 55 in number, which were using oil plant. The apparatus was beneficial to patients, because there was less noise and because it had made available for hospital purposes parts of the building hitherto used for storage. There were plenty of precedents for this concession.

Dr. O'DONOVAN seconded the new clause. He said that he would like the Chancellor of the Exchequer to exercise a little more directive force in the development of hospital life. If, by encouraging hospitals to use oil fuel, the administrative work, including storage, insurance, and man-power, associated with the use of coal for fuel could be economised, it would be an advance in hospital practice.

Major HILLS agreed that this was not entirely a matter of cost. It had been stated that the tax would cost one London voluntary hospital £2400 a year. A newly built hospital, in his own constituency (Ripon), equipped with the latest plant, would have £400 a year added to its expenses, a heavy charge for a country hospital. The real argument against

this tax, however, was that oil was a much better fuel for use in a hospital. It would be a setback to the modern equipment of hospitals if this tax were imposed. It was recognised by the medical profession that by far the best fuel to use was oil fuel, and he did not think that the Chancellor of the Exchequer would like to force hospitals back to coal.

Sir W. DAVISON also appealed to the Chancellor of the Exchequer to exempt the voluntary hospitals. He said that any hospital which might, in future, be inclined to instal plant for burning oil would do it with their eyes open, and would have to make provision for the additional expenditure. He gave examples of the tax which would be payable by individual hospitals and of the inconvenience that would be involved in the return to coal fuel.

Major LLEWELLIN also supported the motion.

Mr. CHAMBERLAIN (Chancellor of the Exchequer) said that everyone who had represented the Treasury knew how difficult it was to resist these insidious and rather dangerous arguments which were brought forward in support of a concession which was asked for on the ground that it was only a little one. The precedents which had been quoted showed how dangerous it was to begin whittling away the foundations on which one rested, and how one concession was immediately made the precedent in asking for another. He had already thought of asylums, sanatoria, and convalescent homes, and, if he had more time, he could think of many other institutions supported by voluntary contributions which might make an equally sound claim. When, in addition to the argument that this was only a little concession, they were brought into contact with the idea of voluntary hospitals and the relief of the sick poor, then, indeed, the sympathies of everybody were naturally aroused, and it was perhaps easy for all of them to be led away towards the cause to which their inclinations would naturally turn them. If it were actually true that all these hospitals which were dependent on voluntary contributions would be obliged to find an additional £400, £500, £1000 or £2000 a year, it would be very difficult to maintain his position, but he had a very good reply. After all, although the supporters of the amendment had adduced the convenience of oil as a strong reason why the hospitals should have installed it and should continue to use it, the fact that there were only 55 hospitals in the country which wese concerned and which had actually installed oil showed that that was not a very powerful consideration.

The real consideration was the comparative cost of the two kinds of apparatus. Not only would this concession not necessarily cost the hospitals a large sum per annum, but, if they followed the example of some very progressive and efficient hospitals which had made the most of the time that had elapsed since the Budget proposals were introduced, they could actually save money. He would cite a case of a hospital in London where conversion from oil to coke has actually taken place since the oil duty was first proposed. The total cost of conversion was £80, and the estimated annual saving due to the use of coke was £2000, so that in two weeks the hospital would have paid off the extra cost of conversion and would be in receipt of an additional source of income which was never thought of before. In the case of a much larger hospital the cost of conversion was no less than £680, and they were going to save £1670. The relative improvement was not so great as in the first case, but the capital expenditure would be paid off in five months and the hospital would have a new source of income. Conditions varied in different cases, and a great deal depended on such technical questions as whether a natural draught was sufficient or whether there would have to be a forced draught. With a natural draught the cost of conversion worked out at £50, and thermostatic control, which was a desirable thing to have, could be supplied at a cost of £20.

Mr. D. SOMERVILLE asked if that was a saving made after the increased cost of the oil was paid or not.

Mr. CHAMBERLAIN said he took it that it was, and that was just the point. They could, by making this conversion, not only not spend more money than they were spending before, but actually save money. The company which gave him this information and which was responsible for the conversion in these cases would, no doubt, be ready to give information to any member interested in a particular hospital. He hoped, therefore, that instead of shedding tears over the new oil duty, they would have found a new hope.

Mr. M. BEAUMONT, speaking as one of the managers of a hospital, expressed regret at the manner of the Chancellor's reply. He said he did not think that managers who had to face the extra expenditure would share the Chancellor of the Exchequer's view that it was a matter out of which they could make money. On the contrary, those who had to face the position had found that this would inflict considerable cost.

Captain FRASER said he would withdraw the amendment, as it was not the wish of the voluntary hospitals to set themselves against any Government by making any demonstration such as a division would obviously imply. The cases which the Chancellor of the Exchequer had given to the House were in the minds of Sir Arthur Stanley and those who advised him (Captain Fraser) as to the manner and terms in which it was desirable to move the amendment. They had full knowledge of the fact that certain hospitals had been able to make savings, but others could not do so. He hoped that the Chancellor of the Exchequer, between now and the time when the Bill came from the House of Lords, would see if he could not reconsider the matter.

The amendment was withdrawn.

Hospital Bills

In the House of Lords on Tuesday, June 20th, the Aberdeen Royal Infirmary and Mental Hospital Order Confirmation Bill and the Victoria Infirmary of Glasgow Act, 1888 (Amendment) Order Confirmation Bill were read the third time and passed.

In the House of Commons on June 20th, the Cancer Hospital (Free) Bill was read a second time.

Local Government Officers' Superannuation

The Local Government and Other Officers' Superannuation (Temporary Provisions) Bill was read a second time in the House of Commons on Tuesday, June 20th.

HOUSE OF COMMONS

THURSDAY, JUNE 15TH

Compensation for Silicosis

Sir WILLIAM JENKINS asked the Home Secretary whether he was aware that Joseph Patrick Brown, Neath, died on March 21st, 1933, suffering from silicosis with marked anthracosis, and after a post-mortem examination he was certified as having crude silica (of dried lung) 2·17 per cent. and pure silica (of dried lung) 2·12 per cent.; that Brown had not worked since February, 1930, and because he was three weeks over the period provided for in the regulations compensation was refused to his widow and eight children; and if he would amend the regulations so as to include all cases at any period.—Mr. HACKING replied: The scheme provides in effect that no claim can be made if the workman dies more than three years after his last employment in the process which gave rise to silicosis, and has not in the meantime obtained a certificate from the Medical Board or already received compensation. The principle of a time limit is recognised in the provisions of the statute dealing with the application of the Act to industrial diseases, and I am advised that so far as our present experience goes, three years is a sufficient period to allow for disability due to silicosis to develop after the man has left the employment. I am informed that Brown was disabled by silicosis some time before the expiry of the three years' limit and that this was known to his advisers, but that unfortunately no application to the Medical Board was made until after his death. The case is undoubtedly a hard one, but my right hon. friend does not consider that it would justify him in proposing an amendment such as the hon. Member suggests.

MEDICAL NEWS

Royal College of Surgeons of England

At the Primary Examination for the Fellowship, from June 6th to the 16th, 174 candidates presented themselves, of whom 58 were approved and 116 were rejected. The following are the names and medical schools of the successful candidates :—

E. S. Allin, M.D. Toronto, Univ. Coll.; G. N. Bailey, M.B. Camb., St. Thomas's; M. Baillie, M.B. Lond., King's Coll.; Alice J. M. T. Barnes, Oxford; P. Baron, M.B., Cape Town; R. J. V. Battle, M.R.C.S., Camb., St. Thomas's, and Middlesex; B. J. Bickford, St. Bart.'s; A. N. Birkett, M.B. Manch.; A. W. Bone, Camb. and London; Arabinda Chaudhuri, M.B. Calcutta, Guy's; J. A. Cholmeley, M.B. Lond., St. Bart.'s; E. J. Collins M.B. N.U.I.; W. S. Diggle, M.B. Liverp.; D. B. Fraser, Oxf. and Middlesex; K. D. Fraser, Univ. Coll.; O. M. Galal, Birmingham; S. Glaser, London; H. C. P. Gunewardene, M.R.C.S., Ceylon and St. Bart.'s; T. S. Heslop, M.B. Manch.; L. J. Honeywill, and J. S. Horn, Univ. Coll.; L. J. Horn, Ch.M. Sydney, Middlesex; J. Hughes, B. Chir. Camb., St. Bart.'s; D. W. Jolly, M.B. N.Z., Otago; H. Josephs, King's Coll.; Marjorie F. Landau, Lond. Sch. Medicine for Women; V. D. Logue, King's Coll.; J. N. Madan, M.B. Punjab, Univ. Coll.; I. Magdi, M.B. Cairo, St. Mary's; I. W. Matheson, M.R.C.S., St. Bart.'s; D. N. Matthews, Camb. and Middlesex; B. W. Nairn, M.B. Melb., Middlesex; W. M. Niblock, M.B. Camb., King's Coll.; J. C. Nicholson, B.M. Oxf., St. Bart.'s; G. W. Palmer, Camb. and St. Thomas's; M. M. Pandya, M.B. Bombay, Middlesex; Dorothy J. Perkins, Lond. Sch. Medicine for Women; S. Rameshwer, M.B. Lucknow, Middlesex; E. P. Rigby, St. Bart.'s; Elaine M. C. Salmond, M.D. Lond., Lond. Sch. Medicine for Women and Univ. Coll.; D. M. Samuel, St. Bart.'s; D. A. Sanford, Univ. Coll.; J. Scholefield, M.B. Leeds, Middlesex; A. K. Sen, M.B. Calcutta, Univ. Coll.; B. K. Sheorey, M.B. Bombay; J. F. Shepherd, M.B. Aberd., Univ. Coll.; M. Z. R. Siddiqui, M.B. Bombay, London; D. Slome, M.B. Cape Town, Middlesex; T. M. Smith, M.B. N.Z., Otago, Middlesex, and Univ. Coll.; R. R. S. Strang, M.B. Glasg., King's Coll.; S. Sunkavally, M.B. Madras, London; W. H. Sweet, Harvard and Oxf.; H. G. Ungley, M.B. Lond., Durham; J. R. Vaid, M.B. Punjab, St. Bart.'s; D. Whitteridge, Oxf.; D. Wilkie, M.D. Edin.; B. L. Williams and R. H. Young, M.R.C.S., Camb. and St. Thomas's.

University of Bristol

At recent examinations the following candidates were successful :—

FINAL EXAMINATIONS FOR M.B., CH.B.

Part I. (*including Forensic Medicine*).—R. D. Bodman, J. R. G. Damrel, F. J. W. Lewis, and S. P. N. Williams.

Part I. only.—M. W. Maged.

Part II.—A. J. Board (Second Class Honours), J. S. Adamson, C. J. N. Davis, G. M. Evans, Winifred M. Hill, R. L. Marks, and H. E. Pearse. (*Group I. only*): A. D. Jones and Francis E. Powell.

FINAL EXAMINATION FOR L.D.S.

I. R. R. Eskell, John Hewitt, and J. H. G. Smith.

Harveian Society of London

The summer meeting of this society will be held at Down House, Downe, on Saturday, July 15th. Sir Buckston Browne will receive members and their private guests at 3.15 P.M., and will introduce the company to Darwin's home and gardens. The members will also visit the Buckston Browne research farm and laboratories, which adjoin Down House.

French Congress of Radiology

The first annual meeting of French-speaking radiologists will be held in Paris at the faculty of medicine from Oct. 12th to 14th. The main subjects of discussion will be (1) the technique and results of radiography of the mucosa of the large intestine, and (2) the use of short waves in therapeutics. The president is Dr. J. Belot, and the general secretary, Dr. Dariaux, 9 bis, Boulevard Rochechouart, Paris, IX^{e}.

Oxford Ophthalmological Congress

This congress will meet at Keble College, Oxford, on the evening of Wednesday, July 5th, under the presidency of the Master, Mr. Cyril Walker. On the following day Dr. S. Holth of Oslo will open a symposium on the treatment of glaucoma (excluding operative details), the other speakers being Colonel Robert Wright, Dr. George Young, Dr. J. Burdon-Cooper, Mr. Harrison Butler, and Mr. Malcolm Hepburn. At the end of this meeting Dr. Uribe Troncoso of New York will give an address on gonioscopy. On the following day Dr. William Stobie will open a discussion on the constitutional factor in diseases of the eye, and Mr. Bernard Cridland will deliver the Doyne memorial lecture entitled Investigations on the Aftermath of Cases of Intra-ocular Foreign Body. In the afternoon Mr. Frank Law and Mr. Affleck Greeves will open a discussion on diathermy and ophthalmology. There will also be a large number of individual communications including one by Dr. Bernard Samuels of New York on necrotic sarcoma of the uvea. The meeting will end on Saturday. The honorary secretary and treasurer is Mr. C. G. Russ Wood, Hill House, Abberbury-road, Iffley, Oxford.

University of Cambridge

At a congregation on June 8th the degree of Ph.D. was conferred on Mr. L. W. G. Malcolm, conservator of the Wellcome Historical Medical Museum, London.

King's College Hospital Medical School

The new buildings of this school will be opened on Tuesday, July 4th, at 3 P.M., by Prince George. Lord Beatty, who is chairman of the committee of management, will preside.

Industrial Welfare Society

This society will hold its fourteenth annual lecture conference at the Wills Hall, Bristol, from July 7th to 11th. The chairman will be Mr. Robert R. Hyde, director of the society, whose offices are at 51, Palace-street, London, S.W.1.

Red Cross Clinic for Rheumatism

Attendances at the Red Cross Clinic, Peto-place, London, last month reached five figures for the first time in the history of the clinic. There were over 4000 attendances by men and 6000 by women.

West London Medico-Chirurgical Society

The fifty-first annual dinner of this society will be held at the Trocadero Restaurant, Piccadilly-circus, London, on Thursday, July 6th, at 7.30 for 8 P.M. The guests will include Lord Dawson, Sir Frederick Menzies, and Lord Justice Slesser.

Society of Medical Officers of Health

Fever Hospital Medical Service Group.—The annual general meeting of this group will take place at the house of the society, 1, Upper Montague-street, Russell-square, London, on Friday, June 30th, at 3.30 P.M. After the election of officers and council an address by Dr. E. C. Benn on Heart Failure in Diphtheria.

Foreign Decorations

Dr. R. S. Miller, late director of the Khanka Mental Hospital, Cairo, has been granted Royal licence and authority to wear the Insignia of Commander of the Order of the Nile, conferred upon him by the King of Egypt, on his retirement from the service of the Egyptian Government.

Demonstrations of Contraceptive Technique

The Society for Constructive Birth Control and Racial Progress announces that at 2.30 P.M. on Wednesday, July 5th, demonstrations of contraceptive technique will be given at their clinic to medical practitioners and senior medical students. Application should be made to the hon. secretary of the society at 108, Whitfield-street, London, W.1.

The Nichols Prize

In accordance with the will of the late Dr. Robert Thomas Nichols, the Royal Society of Medicine offers every three years a prize (being the accumulated interest on £2200), open to any British subject, for a contribution towards the discovery of the causes and the prevention of death in childbirth from septicæmia. Particulars will be found in our advertisement columns.

Lady Tata Memorial Scholarships

The trustees of the Lady Tata Memorial Fund announce that, on the recommendation of the scientific advisory committee, they have made their awards of scholarships for the academic year 1933–34. These scholarships were open to graduates of any nationality for research work in diseases of blood, with special reference to leukæmia. The recipients are Dr. Walter Büngeler (Frankfort-on-Maine), Dr. Leonid Dolschansky (Berlin), Dr. Martin Cyril Gordon Israëls (Manchester), and Dr. Charles Oberling (Paris).

Rockefeller Medical Fellowships

The Medical Research Council announce that, on behalf of the Rockefeller Foundation, they have made the following awards of travelling fellowships for the academic year 1933–34: Harold Williams Fullerton, M.B. Aberd., Department of Medicine, University of Aberdeen; Margaret Honora Roscoe, B.Sc. Lond., Lister Institute, London; Donal Sheehan, M.D. Manch., Department of Anatomy, University of Manchester; and Solly Zuckerman, D.Sc. Lond., M.R.C.S., Department of Anatomy, University College, London.

These fellowships are awarded to graduates who have had some training in research work either in the primary sciences of medicine or in clinical medicine or surgery, and who are likely to profit by a period of work at a chosen centre in America, or, in special cases, in Europe, before taking up positions for higher teaching or research in the British Isles.

Dr. Sheehan's fellowship is tenable at Montreal; the others at centres in the United States.

Sale of Devonport Military Hospital

This hospital was sold by auction last week, by order of the War Office, for £10,000. It was opened in 1858 and closed in 1926, owing to the diminution of patients, who now go to the Royal Naval Hospital at Stowehouse. There are four ward blocks, an administrative block, and five dwelling-houses.

West Kent General Hospital

The report for 1932 of this hospital (106 beds) states that there were 1582 in-patients, whose average daily cost was 9*s*. 0½*d*. The cost of each occupied bed was £165 5*s*. 3*d*. The West Kent Maternity Home, which forms part of the hospital, had applications for beds from 80 mothers, but only 45 could be booked.

Duty on Silkworm Gut

By an Order issued by the Treasury, on the recommendation of the Import Duties Advisory Committee, untrimmed natural silkworm gut in hanks or bundles is exempted from duty chargeable under the Import Duties Act. This material is used in making gut for fishing tackle as well as for surgical suture.

National Association for the Prevention of Tuberculosis

This association will hold its nineteenth annual conference in Cardiff from July 13th to 15th under the presidency of Sir Robert Philip. The principal discussion will be on the part played in the production of tuberculosis by infection and by environmental conditions, this subject being introduced by the president and Dr. Ralph Picken. Addresses will also be given on the history and organisation of the King Edward VII. Welsh National Memorial Association. The secretary's office is at Tavistock House North, London, W.C.1.

William Harvey Memorial

The rebuilding of the Hempstead church tower has been begun, and the foundation-stone will be laid by Lord Dawson on Friday, July 7th, at 3.30 P.M. Members of the medical profession are invited to attend, and those who wish to do so should notify the Rev. T. P. Conyers Barker, The Vicarage, Hempstead, Saffron Walden, Essex. Arrangements will be made for visitors who desire to travel by coach from London, provided notice is given to Mr. Barker by July 3rd, and tea will be provided at the vicarage after the ceremony. With the funds in hand, only the first section of the work can be completed, but it is hoped that further donations will be forthcoming. They should be sent to Dr. Arnold W. Stott, 58, Harley-street, London, W.1.

Royal Medico-Psychological Association

This association will hold its ninety-second annual meeting from July 5th to 7th, partly at Colchester and partly at Clacton-on-Sea, under the presidency of Dr. F. Douglas Turner, who will give an address on Mental Deficiency. Papers will be read on the interaction of heredity and environment (Prof. Lancelot Hogben), juvenile types of general paralysis (Dr. R. M. Stewart), community control of mental deficiency in the United States (Mr. E. A. Doll, Ph.D.), the relation of cholesterol to mental disorder (Dr. A. Glen Duncan), and emotional factors in mental retardation (Dr. Emanuel Miller). The annual dinner will be held at the Grand Hotel, Clacton, on Wednesday, July 5th, at 7.45 for 8 P.M. The general secretary is Dr. Reginald Worth, Springfield Mental Hospital, London, S.W.17.

Maternity and Child Welfare

The sixth English-speaking Conference on Maternity and Child Welfare will be held at Friends House, Euston-road, London, N.W., from July 5th to 7th, under the presidency of Sir George Newman. The subjects of discussion will include antenatal care, the care and protection of illegitimate children, work for cripples, the health of the child in relation to its environment, and ways and means of propaganda. Those taking part will include Dr. A. Morris Johns, Mr. Harold Chapple, Dr. C. W. Saleeby, Mr. A. M. Hendry, Mr. H. S. Souttar, Dr. Eric Pritchard, Dr. C. D. S. Agassiz, Dr. W. A. Bullough, Dr. Elwin Nash, Prof. Winifred Cullis, and Dr. Harold Waller.

In connexion with the conference there will be a clinical course for medical practitioners on July 3rd and 4th. Visits will be paid to the Royal National Orthopædic Hospital, the Royal Westminster Ophthalmic Hospital, the Queen Charlotte's Isolation Block, the North Kensington Women's Welfare Centre, and the house of the Mothercraft Training Society. The course is arranged in association with the annual meeting of the maternity and child welfare group of the Society of Medical Officers of Health, and Dr. Margaret Emslie will give a presidential address, on War in the Family, at 8.30 P.M. on July 4th, at 1, Upper Montague-street, London, W.C. Further particulars may be had from Dr. C. Isobel Wright, 121, Rosebery-avenue, E.C.1.

Pharmaceutical Society of Great Britain

School of Pharmacy.—Prof. H. G. Greenish, F.I.C., dean of this school, is retiring at the end of the present term. He joined the teaching staff in 1890 and was appointed dean in 1914. He was joint editor (with Sir Nestor Tirard) of the 1914 issue of the British Pharmacopœia, and was a member of the commission responsible for the production of the latest issue. Dr. J. H. Burn, for the past six years director of the pharmacological laboratories of the society, has been appointed to succeed him as dean.

Epsom College

Election of Foundationers.—The following were elected by the Conjoint Committee on June 14th: Edward H. Couper, Hugh W. Macintyre, Anthony G. Quinlan, Robert S. Sunderland, Robert D. West, William J. Dunlop, William M. Pinder, George L. H. Steede, Peter V. Verver, Brian H. Harriss, Michael R. Tosswill. The voting system having been abolished, the beneficiaries are now elected by a conjoint committee consisting of 20 governors, 10 being members of the council and 10 non-members of the council. This committee met on June 14th to elect (*a*) 11 foundation scholars, who will receive education, board, clothing, maintenance, and pocket money, free of all cost; and (*b*) two ordinary pensioners, who will receive £40 a year. There were 24 candidates for the 11 vacant scholarships and 46 candidates for the 2 vacant pensionerships. In view of the large number of candidates who cannot stand again owing to age, the council this year decided to maintain 54 foundation scholars, instead of the usual number of 50. This will cost an extra £600, which will mean that contributions totalling some £10,600 must be collected in subscriptions and donations.

In aid of the funds of the college mission at Lambeth, members of Epsom College will present Massinger's "A New Way to Pay Old Debts"—in which Keane played one of his most famous parts—at the College on July 19th, and at the Mission Institute in Lambeth-road on July 21st. Tickets may be had from the secretary to the mission committee, Epsom College, Surrey.

At the Public Schools Rifle Shooting Competition at Bisley last week Epsom College achieved conspicuous success, the following being among the results:—

Cusack-Smith Bowl, for school teams of eight: Epsom, 475. Next.—Harrow 473, Winchester 464, Bradfield 463.
Aylesbury Prize: C.S.M. Crump (Highgate), 64. Next.—Cpl. Moore (Epsom), 64; Cadet Burn (Haileybury), Sergt. Wise (Winchester), C.S.M. Naylor (Emanuel), 63.
Ninth Man Match: Cadet R. D. Ewen (Harrow), 58. Next.—Cadet L. C. Page (Epsom), 58; Cadet Mollison (Winchester) and L/Cpl. Turvey (King's College School), 57.
Veterans Match: Hurstpierpoint, 188. Next.—Eton "A," 185; King's College School, 184; Epsom "A," 180.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

THURSDAY, June 29th.—8.30 P.M. (in the Kensington Town Hall), Sir Peter Chalmers Mitchell: The Diet of Animals. (Cavendish lecture.) Preceded at 8 P.M. by a Reception, and followed by a Conversazione and Exhibition.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY, Leicester-square, W.C.

WEDNESDAY, June 28th.—4.15 P.M., Cases. 5 P.M., the President and Dr. I. Muende: Pathological Demonstration.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, June 26th, to SATURDAY, July 1st.—MEDICAL SOCIETY OF LONDON, Chandos-street, Cavendish-square. Wed., 5 P.M., Mr. Andrew McAllister: Some Features of Eclampsia.—ROYAL FREE HOSPITAL, Gray's Inn-road. Antenatal Treatment, Frid., 5 P.M.—NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street. Course in Cardiology, occupying the whole of each day.—CHILDREN'S CLINIC, Cosway-street, Marylebone-road. Post-graduate Course in Children's Diseases. Afternoons and some mornings.—MEDICAL SOCIETY OF LONDON, Chandos-street, Cavendish-square. Mon., 8.30 P.M., a lecture on Modern Methods of Local and Spinal Anæsthesia, by Dr. Roland T. de Hellebranth (of New Jersey, U.S.A.).—WEST END HOSPITAL FOR NERVOUS DISEASES, IN-PATIENT DEPARTMENT, Gloucester-gate, N.W. Tues., 8.30 P.M., a Demonstration on the Fundus

Oculi, by Mr. R. Lindsay Rea. (Especially suitable for M.R.C.P. candidates.)—PRINCE OF WALES'S HOSPITAL, Tottenham. General Post-graduate Course in Medicine, Surgery, and the Specialties, occupying the whole of each day.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith-road, W.

MONDAY, June 26th.—10 A.M., Medical and Surgical Wards, Skin Clinic. 2 P.M., Gynæcological and Eye Clinics, Surgical Wards.

TUESDAY.—10 A.M., Medical Wards. 11 A.M., Surgical Demonstration. 2 P.M., Throat, Nose, and Ear Clinic. 4.15 P.M., Mr. Green-Armytage: The Acute Abdomen in Women.

WEDNESDAY.—10 A.M., Medical and Children's Wards. Children's Clinic. 2 P.M., Eye Clinic. 3.45 P.M., Venereal Diseases Demonstration.

THURSDAY.—10 A.M., Neurological and Gynæcological Clinics. 11 A.M., Fracture Demonstration. 2 P.M., Eye and Genito-urinary Clinics. 4.15 P.M., Dr. Maurice Shaw: Diabetes.

FRIDAY.—10 A.M., Skin Clinic. 12 noon, lecture on Treatment. 2 P.M., Throat, Nose, and Ear Clinic. 4.15 P.M., Dr. Owen: Tuberculous Meningitis.

SATURDAY, July 1st.—10 A.M., Medical and Surgical Wards, Children's Clinic.

DAILY.—2 P.M., Operations, Medical and Surgical Clinics. The Demonstrations at 4.15 P.M. are open to all medical practitioners without fee.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.

WEDNESDAY, June 28th.—4 P.M., Dr. C. E. Lakin: Demonstration of Medical Cases.

ST. MARK'S HOSPITAL, City-road, E.C.

THURSDAY, June 29th.—4.30 P.M., Dr. Cuthbert Dukes: Diseases Due to Intestinal Parasites.

NATIONAL HOSPITAL, Queen-square, W.C.

TUESDAY, June 27th.—6 P.M., Dr. Symonds: Disseminated Sclerosis.

THURSDAY.—6 P.M., Dr. Carmichael: Cerebral Vascular Disease.

UNIVERSITY OF BIRMINGHAM.

TUESDAY, June 27th, and THURSDAY.—4 P.M., Prof. Alfred F. Hess: Fat-Soluble Vitamins. (Ingleby lectures.)

Appointments

ALLEN, W. E. L., M.B., C.M. Glasg., has been appointed Certifying Surgeon under the Factory and Workshop Acts for Hawkshead, Lancaster.

MANN, I. L.D.S. R.C.S., Dental Surgeon to the Royal Hampshire County Hospital.

Vacancies

For further information refer to the advertisement columns

Birmingham, Dudley-road Hospital.—Jun. M.O. At rate of £200.

Birmingham Maternity Hospital.—Res. M.O. and Reg. £200.

Birmingham and Midland Eye Hospital, Church-street.—H.S. £130–£150.

Birmingham, Selly Oak Hospital.—Cas. O. At rate of £200.

Blackburn Royal Infirmary.—Fourth H.S. £150–£250.

Brighton, Royal Sussex County Hospital.—H.S. £150.

Bristol Eye Hospital.—Asst. Res. H.S. At rate of £100.

Burnley, Victoria Hospital.—H.S. At rate of £150.

Canterbury, Kent and Canterbury Hospital.—H.S. At rate of £125.

Cardiff Royal Infirmary.—Hon. Physician.

Central London Ophthalmic Hospital, Judd-street, St. Pancras, W.C.—Sen. and Jun. H.S. At rate of £120 and £100 respectively.

Charing Cross Hospital, W.C.—Hon. Clin. Asst. to Dermatological Dept.

Cheadle Royal Mental Hospital, Cheadle, Cheshire.—Clin. Asst. At rate of £150.

Coventry and Warwickshire Hospital.—Res. Cas. O. £125.

Dreadnought Hospital, Greenwich, S.E.—H.P. At rate of £110.

East Ham County Borough.—M.O.H. and School M.O. £1100.

Folkestone, Royal Victoria Hospital.—Jun. Res. M.O. At rate of £120.

Gloucestershire Royal Infirmary, &c.—Two H.S.'s. Each at rate of £150.

Hertford County Hospital.—H.S. At rate of £200.

Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. £50.

Huddersfield Royal Infirmary.—H.S. At rate of £150.

Hull Royal Infirmary.—Cas. O. At rate of £150.

Lerwick, Gilbert Bain Memorial Hospital.—Surgeon and Consultant, &c. £700.

Liverpool Heart Hospital.—Asst. Physician. £200.

Liverpool, Mill-road Infirmary.—Med. Supt. £1000.

Liverpool Royal Children's Hospital, Myrtle-street.—Hon. Director of Orthopædics.

London Lock Hospital and Home, Harrow-road, W.—Hon. Surg.

London University.—External Examinerships.

Manchester Babies' Hospital, Burnage-lane, Levenshulme.—Jun. Res. M.O. At rate of £50.

Manchester, Christie Cancer Hospital and Holt Radium Institute. Surg. O. £150.

Manchester, Withington Hospital and Institution.—Asst. M.O. At rate of £275.

Manor House Hospital, Golders Green, N.W.—Jun. H.S. £200.

National Hospital for Diseases of the Nervous System, Queen-square, W.C.—H.P. £150.

Newcastle General Hospital.—H.S. and H.P. Each at rate of £150.

Northampton, Manfield Orthopædic Hospital.—Res. M.O. £250.

Nottingham City.—Asst. M.O.H. £500.

Oxford, Radcliffe Infirmary and County Hospital.—Hon. Surg. Also Hon. Surg. to Ear, Nose and Throat Dept.

Preston and County of Lancaster Royal Infirmary.—H.S. Also Special H.S. Each at rate of £150. Also Res. Surg. O. At rate of £300.

Queen Mary's Hospital for the East End, Stratford.—Cas. O. £150.

Queen's Hospital for Children, Hackney-road, E.—Res. M.O. At rate of £200.

Royal Eye Hospital, St. George's-circus, S.E.—Hon. Physician.

Royal National Orthopædic Hospital, 234, Gt. Portland-street, W. Hon. Asst. S.

Royal Northern Hospital, Holloway, N.—H.S., H.P., and Obstetric H.S. Each at rate of £70.

Royal Society of Medicine, 1, Wimpole-street, W.—Nichols Prize.

St. Charles' Hospital, St. Charles'-square, Ladbroke-grove, W.—Asst. M.O. £250.

St. John's Hospital, Lewisham, S.E.—Res. H.S. At rate of £100.

St. Mary Abbots Hospital, Marloes-road, Kensington, W.—Pathologist.—£1100. Also Asst. Pathologist. £650.

St. Mary's Hospital, W.—Surg. Reg. £200.

St. Mary's Hospital for Women and Children, Plaistow, E.—Hon. Gynæcologist.

Sheffield, Children's Hospital.—H.P. and H.S. Each at rate of £100.

Sheffield Royal Infirmary.—Jun. Res. M.O. £80–£100.

Shrewsbury, Royal Salop Infirmary.—Res. H.P. At rate of £160.

Southend-on-Sea County Borough.—Asst. M.O.H. £600.

Southend-on-Sea General Hospital.—Sen. Asst. Res. M.O. £150.

Victoria Hospital for Children, Tite-street, Chelsea, S.W.—H.P. and H.S. Each at rate of £100.

Warrington Infirmary and Dispensary.—Jun. H.S. £175.

West End Hospital for Nervous Diseases, 73, Welbeck-street, W.—Hon. Asst. Ophth. Surgeon.

West London Hospital, Hammersmith, W.—Hon. Med. Reg. to Children's Dept.

Western Ophthalmic Hospital, Marylebone-road, W.—Res. Jun. H.S. At rate of £100.

Wigan Royal Infirmary.—H.S. At rate of £150.

Willesden General Hospital, N.W.—Clinical Assts.

Windsor, King Edward VII. Hospital.—Two H.S.'s. Each at rate of £100.

Wolverhampton and Midland Counties Eye Infirmary.—H.S. £150.

Wolverhampton Royal Hospital.—Two H.S.'s. Each at rate of £100.

Worcester County and City Hospital, Powick.—Asst. M.O. £350.

Wrexham and East Denbighshire War Memorial Hospital.—Res. H.S. At rate of £150.

The Chief Inspector of Factories announces vacancies for Certifying Surgeons at Swaffham (Norfolk), Beccles (Suffolk), and at Twickenham.

Births, Marriages, and Deaths

BIRTHS

MACAULAY.—On June 14th, at Waterloo, Liverpool, the wife of Dr. Blair Macaulay, of a son.

KENCH.—On May 22nd, the wife of E. S. Kench, L.D.S., Thorn Cottage, Alton, of a daughter.

MARRIAGES

MCTAVISH—TURNBULL.—On June 14th, at the Cathedral of the Isles, Millport, John Sinclair McTavish, M.B., Ch.B., to Janet Govan, second daughter of Mr. and Mrs. N. K. Turnbull, Craig-en-Ros, Millport.

DEATHS

ALDRIDGE.—On June 15th, at Alton, Hants, Norman Elliott Aldridge, M.B., D.P.H., late of Southampton.

BROWN.—On June 19th, at The Cottage, Wray-lane, Reigate, Edwin Harold Brown, Lieut.-Colonel (retd.), I.M.S., M.D., M.R.C.P., F.R.C.S., in his 72nd year.

CLARKE.—On June 15th, at Mena House, Horley, Surrey, Samuel Arathoon Clarke, M.R.C.S. Eng., L.R.C.P. Lond., aged 70 years.

FRANKISH.—On June 16th, suddenly, at Mayford-road, S.W., William John Frankish, M.R.C.S., L.R.C.P., J.P., aged 78 years.

REID.—On June 15th, at "Sherbrook," The Crescent, Doncaster-road, Rotherham, Arthur Gordon Reid, M.B., C.M., B.Sc., aged 72.

WADGE.—On June 17th, suddenly, as the result of a motor accident, Herbert Collett Wadge, B.A. Oxf., M.R.C.S., L.R.C.P., aged 26.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

THE EXUDATIVE DIATHESIS *

BY C. PAGET LAPAGE, M.D. MANCH., F.R.C.P. LOND.
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DIATHESIS determines the trend of biochemical reactions in individuals. A diathesis is usually of hereditary origin, but it is possible that it may be acquired. For instance, a prolonged disorder of metabolism or of endocrine gland balance may leave effects on the individual which are life-long. We all realise that infection causes disease, but we may not realise as fully as we should do the fact that biochemical reactions and their toxic effects on the autonomic nervous system produce many severe illnesses. The reactions and illnesses which occur in allergy and in many diathetic disturbances are essentially biochemical, infection being absent or playing only a minor part by lowering tissue resistance and function tolerance.

Children of the exudative type are of great sensibility, with intense reactions to their surroundings. They spend their nervous energies so freely that a reaction follows, leading to nervous exhaustion and probably to associated metabolic disorders. They have inherited, and may have irritated, an excitable autonomic nervous system. They blush with unusual facility, have erythema under mental stress, moist hands and feet, vehicle sickness, or show some other signs of sensibility such as metabolic habits like asthma, and acidosis, eczema, hay-fever. Local irritations may play their part in the excitation and perhaps the determination of the site of these habits, but the same local irritation will not cause a habit in a child who is not "exudative."

Exudative children, in addition to the signs of sensitiveness mentioned above, show dark rings under the eyes, and are pale but not anæmic. They are "liverish," showing at times rough patches on the skin, a furred tongue, and deposits of urates. Digestive attacks, "chills on the liver," may follow periods of stress or exposure. East winds and bracing seaside places may not suit them. Urticaria may occur. Attempts to feed with rich emulsions and creams usually lead to an accentuation of the symptoms because they overload metabolism with amino-acids. Infections will accentuate metabolic and nervous disorders, but are not the primary cause of them; indeed one often feels that it is the constitutional tendency and the metabolic disorder (overloading) that give liability and lowered resistance to infection, thus accounting for the frequency of chronic catarrhs and infections in these children. The child is endowed with a low metabolic tolerance for rich food, and perhaps for certain substances to which he has become sensitised, and a low nervous tolerance for stress and strain. Absorption, internal metabolism, and elimination are all concerned, and the child has to learn how to live without exceeding his tolerance and thus producing his own pet metabolic disorder. If he does so he is often a bright lively child, entering fully into life and doing well amongst his fellows; if he does not, he may become a chronic "dyspeptic" or may go on to certain metabolic or systemic habits.

Allergy

In allergy children become sensitive and develop reactions to certains proteins such as animal hair, fur or feathers, or to foods like meat, milk, fish, bananas, or to specific proteins produced in the patient's own body by chronic infection. In some instances there is evidence of a production of toxic histamine-like bodies in the tissues affected. Here again constant repetition of what is really a metabolic shock leads to a marked intolerance and habit formation. Allergy is to be defined as a state of sensitisation in which the system shows certain habit reactions to certain foreign metabolic irritants, usually protein in nature; these reactions being dermal, vascular, hæmic, respiratory, digestive, renal, arthritic, or cerebral and cardiac according to the individual diathesis and to the local irritation, infective or chemical, and to the production locally of histamine-like bodies. Set out in tabular form the action of irritants is as follows.

IRRITANTS TO EXUDATIVES

Individual is exudative and may be sensitised.

External irritants	1. Foreign proteins	Animal.
		Pollens.
		Egg.
		Milk.
		Bacteria.
	2. Metabolic	Milk fats.
		Fish-liver oil.
		Whole-meal.
		Acids.
		Fruits: citrus, banana, &c.
	3. Climatic	East winds.
		Seaside, with bracing air.
Internal irritants	Chronic infections from nose, throat, lungs, bowel, &c.	
	Active infected glands.	

I have previously [1] given nine manifestations of the exudative diathesis as curd dyspepsia, urticaria, eczema, hay-fever, angioneurotic œdema, asthma, cyclical vomiting, bilious attacks, gouty signs, and I will now briefly consider them and others in their clinical and diathetic aspects.

Asthma

Asthma is picked out from other chest conditions by its sudden onset, periodic occurrence, spasmodic nature, and sudden disappearance. Partly nervous, partly biochemical, and partly allergic in origin, it is however peculiar in being essentially non-infective. There is a condition of spasm of the bronchioles and partial stasis. Clinically the disproportion between the physical signs and the pulse and temperature reactions is most notable. Local lesions in the chest are very important both in causing bronchitis and irritation and in producing allergens to which the patient is sensitive. They are chiefly catarrhal and fibrotic, and show to X ray as dark shadows at the roots of the lungs or as definite fibrotic bands. The shadows of enlarged bronchial glands, sometimes calcified, are often seen.[2] Care must be taken to exclude major chest conditions, including root phthisis. I shall not, however, attempt to discuss differential diagnosis here. The nasal septum may be sensitive and cause reflex irritation. Septic tonsils must of course be removed.

Family histories showing a strong hereditary tendency for asthma and for other exudative signs and symptoms are very common. In a family where the brother and sister had asthma and the sister hypochlorhydria, the father's father had asthma, but the father did not have asthma; the mother's father and his three brothers and both her grandparents had asthma. Like all exudatives, asthmatics are liable to become sensitive to special grass pollens or to animal and vegetable proteins. Allergy then develops and readily becomes habitual. Clinically, as well as experimentally, the asthmatic is usually "liverish," which means defective metabolism or defective elimination. Rich fats are the chief offenders.

The psychological side is important. The nervous make-up of an asthmatic is usually sensitive and artistic. They are so virile and exacting of themselves that they overstrain their physical, mental,

[1] Based on communications given to the Association of Physicians of Great Britain and Ireland and to the Colwyn Bay Medical Society.

and metabolic powers. The autonomic nervous system suffers also.

Adrenaline and ephedrine stimulate the sympathetic to overcome vagus over-action, and are useful in aborting or relieving an attack. Ephedrine is slower in acting. The dosage is gr. ¼ to an infant and after that gr. ¼ to ½, depending on age. Adrenalin is uncertain by mouth, and subcutaneously is used in a 1 in 1000 solution, ♏ 1–5 being given. The Apneu inhalation apparatus is valuable but expensive for the treatment of asthma. The action of some gases, such as oxygen and carbonic acid, may be metabolic and chemical. Belladonna, stramonium, and lobelia tend to relax bronchial spasm either by mouth or by inhalation. The two latter may act when vaporised by smoking or burning. They will, however, irritate if used too much. Sprays containing powerful drugs like cocaine should not be used. Morphia is sometimes valuable. To the nose an ointment with anæsthesin is useful for sensitive areas.

All sources of protein allergens are removed, including dust. Van Leeuwen's dust-proof chamber may be worth while, but it is doubtful how much the relief is due to the chamber per se. Most asthmatics soon recover in a hospital ward. In an attack metabolism needs careful attention, especially elimination. A brisk purge should be given and diet kept very light. Much milk is unsuitable, protein and carbohydrates are valuable. Foods which cause allergic reactions must be removed. Massage and skin therapy may help as the skin may be dry and inactive. Fresh air without chilling is important. The status asthmaticus is treated as recommended by Hurst [3] by continuous injection of adrenaline ♏ i. every 30 to 60 seconds until symptoms cease. The needle is kept in position.

Cyclical Vomiting

Cyclical vomiting as distinguished from occasional attacks of acidosis is recurrent and periodic. In an attack the child vomits excessively, is restless, and breathes irregularly, and sometimes with deep sighs. There may be signs of stupor. There is a severe metabolic disorder with acetone in the breath and aceto-acetic acid in the urine, and often a true acidosis, not merely an acetonuria. As Findlay [4] points out, it is important to distinguish between the true condition and mere acetonuria because the latter may be present in alkalosis.

An attack is brought about by some sudden strain on metabolism which has been cumulatively overloaded, usually by imperfect fat assimilation. Unusual physical and mental effort or a full present-day diet may be a distinct strain to the exudative child, especially if a septic abdominal focus is lowering his health. A sudden infection may determine acidotic symptoms as witness the acetonuria often found at the onset of exanthemata or in relation to tonsillitis. A child taken into hospital may by fretting and by starvation develop an acetonuria. I have one patient who successfully prevented her parents from going away by working herself into a real attack of cyclical vomiting. One can almost say that cyclical vomiting is Nature's way of ensuring a complete rest for the assimilative organs and perhaps of protecting some children from their parents and relations; a dangerous but effective remedy. A systemic habit becomes established and with custom attacks are more readily produced. There does not seem to be the relation to any specific protein reactions as there is in asthma.

The immediate treatment of an attack is to give the child fluid, preferably by mouth; iced, and in sips if necessary, but if not, per rectum or subcutaneously. The bowels should be cleared, and if necessary the stomach may be soothed by lavage. Glucose is given in 5 per cent. solution by mouth and per rectum or intravenously 100–200 c.cm. It is more important than sodium bicarbonate, but the latter may be used in a 4 per cent. solution intravenously until the urine becomes alkaline; 75 c.cm. (2½ oz.) or more can be given to an infant. The solution needs a special preparation.[5] Blood transfusion may be valuable in severe cases. Oxygen given subcutaneously has undoubtedly helped some of my cases. The reaction is, I think, a biochemical one. Cocaine hydrochloride orally, gr. ¼ every 2–3 hours to a child of 5 years, may be useful.[5] Morphia is needed for some cases who are very restless. The attack may possibly be aborted in its earliest stages by starvation and a free saline purge.

Once the child stops vomiting and begins to keep down even a very little water, the outlook is much brighter. Preventive measures, in addition to those to be described later, are the relief of septic foci, especially those in the abdomen, the avoidance of furred tongue. Duodenal catarrh is quite common in these cases who may have periodic attacks, commonly called chills on the liver. In an exudative subject any one of these may turn into an attack of cyclical vomiting.

Eczema

Eczema of Besnier's type is an intercellular infiltration of the Malpighian bodies with plasma exuded from the capillaries. More cells are formed, but fail to keratinise and desiccate rapidly. Thus wet and dry forms are found and a superadded infection causes pustules. Dowling [6] gives a good description of the pathology. The skin may be hereditarily sensitive and genuinely so, but faulty biochemical reactions and perhaps the local development of allergy from histamine-like irritants may indicate that the real inheritance is the exudative diathesis. Preliminary signs such as strong-smelling urine, stool disturbances, roughness of the skin, seborrhœa, &c., may pass unnoticed. Milk fats are badly digested, and curd dyspepsia, which is really usually fat dyspepsia, is often seen.

Local irritations, chemical, thermic, climatic, infective, may all provoke the eczema or determine its site. It is certainly a metabolic as well as an irritative disorder. We can thus see how it can improve or disappear when another exudative or a depletory condition occurs in the patient. An attack of bronchitis, an acute exanthem, or a depletory diarrhœa may lead to a temporary clearance of the eczema. Breast-feeding from an exudative mother may cause eczema, and in one of my cases a careful regulation on anti-exudative lines of the mother's diet during pregnancy and lactation led to a successful nursing of the baby and no eczema, although several previous successive children had had eczema. It was striking how the mother could nourish a baby so well during pregnancy and lactation on a diet which contained no butter and limited milk.

Acidified milk [7] or a dose of dilute hydrochloric acid with feeds may have good results. The reaction of the stools and urine should always be watched, and my experience is that acidity of either tends towards improvement in the eczema. Local treatment depends on whether the eczema is wet or dry. Lassar's ointment is the best for most cases. It needs a cover usually. If the eczema is angry a lotion of calamine and lead, or zinc oxide, lanoline, olive oil, and lime water may suit. Menthol gr. 1 to 2 to ℥ 1 or weak carbolic lotion may relieve itching. Tar and sulphur preparations are better for the more chronic cases. Oil of cade ℥ ½, Collod. flex. ℥ 1, as recommended by Mitchell and Griffiths, is useful. Mercuric paste and ointments may be needed for superadded septic conditions. Olive oil and liquid paraffin, and sometimes starch poultices, are useful for clearing crust. Petroleum emulsion or liquid paraffin seems to have some effect in soothing the skin, possibly by relieving toxic absorption. Clothes must not rub; silk or linen is best next to the skin. A mask may be needed, and to prevent scratching splints on the elbows or tying of the hands to the waist so that they cannot reach above the neck. A pillow cover to prevent head rubbing, made of oil silk and fitting like a collar over the child's neck and lying over the pillow, is described by Greenebaum and Keith.[8]

Dietetically I find intolerance of milk fat and of orange juice to be common, and perhaps of grape juice and cod-liver oil. I then consider the proteins and the fats derived from sources other than milk, with an average amount of sugar for the main sustaining element in the diet. It is possible that goat's milk may suit and the synthetic food Almata is a useful diet for these cases.

Other Manifestations

Urticaria is often associated with another sign of metabolic overloading—urates in the urine. Urticaria may be mistaken for chicken-pox, but the history of previous attacks often gives the correct diagnosis. It may be caused by specific foods, such as fish or banana, or as a cumulative effect of overfeeding with rich foods, and perhaps by being at bracing seaside places. Severe itching may be a very troublesome symptom.

"*Curd*" *dyspepsia*, better called allergy dyspepsia, is described by White [9] as vagogenic gastro-enteric spasm. It is often the first sign of the exudative diathesis and it is of frequent occurrence. Much harm is done by persisting in fat rich feeding in such cases. Special food idiosyncrasies must be looked for. One case of mine had colic "curd" dyspepsia and eczema.

Hay-fever is often caused by one specific protein, but there is the sensitive autonomic nervous element in its causation too. The vasomotor element is in evidence in this condition which is essentially a paroxysmal rhinorrhœa. The state of the general health has an effect in the occurrence of the attacks, and an overloaded metabolism may accentuate the likelihood of an allergic response.

Angioneurotic œdema is sometimes very dangerous. One patient of mine, a girl, had an acute attack in the throat not infrequently; she has nearly had a tracheotomy done several times. Another, the sister of an asthmatic, has an attack as soon as she has eaten nuts, and has since had an attack of acidosis. Distensible tissues, like the eyes and lips, swell suddenly, and the swelling may have disappeared by the time the medical man reaches the patient. It is likely to be an autonomic nervous system disorder relation to blood-vessels. Its frequency is checked by dieting and general measures to alleviate the irritability of the autonomic nervous system. Local measures, such as cooling applications, may help. Adrenaline should be tried.

Colitis may be infective, but it may also be of allergic origin. Exudative children on occasion pass much mucus and at the same time have colic. The mucus in the stools may be due to a spasm of the bowel but there is present a recurrent disturbance of the autonomic nervous system, and irritability of the constrictional mechanism of the bowel. This muscle constriction may be an effort to get rid of the mucus generated by vasomotor and other disturbances of the autonomic nervous system. For more than ten years I have described spastic colon and mucous colitis in exudative children. On palpation of the abdomen the colon can be felt contracted into a big sausage-like swelling above the right iliac fossa. It may contract more tightly on palpation, and later relax and disappear. At times of relaxation it cannot be felt. Enlarged mesenteric glands may be present. They act as the local irritant, and in addition lower the general health. I have known older children in whom the disappearance of other exudative symptoms coincided with the appearance of a depletory colitis. Treatment is as for other exudative conditions.

Geographical tongue, which is often mistaken for furred tongue due to constipation, occurs in exudative children and is distinguished from ordinary furring by its map-like character. It is not necessarily harmful, and the child must not be made worse by efforts to relieve it with strong aperients. One of my patients had geographical tongue, asthma, and also spells of urinary acidity with meatal sores; another disorder which is sometimes seen in exudatives.

Other renal conditions which might be exudative are orthostatic albuminuria, and possibly paroxysmal hæmoglobinuria. Orthostatic albuminuria certainly occurs in this type of child and is really diathetic in origin. Bray [10] has suggested that enuresis may be allergic. Some small percentage of cases may be so, but I have not observed that exudative children are specially liable to enuresis. Gout and arthritic conditions are obviously exudative, but I shall not attempt to deal with them here. Migraine occurs in children and in quite young children. There is usually a family history and attacks are brought on by over-exercise, over-excitement, or by over-eating, just as are other exudative symptoms. I have never seen migraine as an allergic reaction to specific protein, but it is quite likely to be caused by vasomotor spasm and is brought about by overstrain of the autonomic nervous system, with perhaps local stimulation like eyestrain.

Convulsions I classify as (1) irritative (Jacksonian) due to cerebral lesions; (2) metabolic; (3) true epileptic, usually with a bad family history and no discoverable lesion and abnormality. Leaving aside classes 1 and 3 we find that rickets and tetany, two forms of metabolic disorder, can cause convulsions. The question remains, can convulsions arise in an exudative child as a result of metabolic stress just as asthma or eczema do? It seems to me that they can. Freeman [11] is in agreement with this. Many cases of convulsions in exudative children cannot be put in any other class, and I have lately seen a case in which the disappearance of eczema coincided with the reappearance of convulsions. Such children are sensitive and excitable, and have an exudative family history and not an epileptic one. The convulsions may become persistent just as other systemic habits like asthma and eczema do, but they may disappear if the child's life is ordered on the proper lines. Treatment is obviously to feed the child correctly, to promote elimination by skin and kidneys and bowels, and to prevent overstrain by controlling mental and physical outlet. Bromides or luminal are permissible to prevent the formation of a system habit.

Motion or vehicle sickness occurs in the exudative child. Its origin is mental as well as physical, and once developed it becomes a habit and easily recurs. Sea-sickness, air-sickness, and train-sickness are examples. For children motor-car sickness is now a greater problem than train-sickness. It is caused to some extent by saloon cars and by the wavy movement on balloon tyres over undulating roads. A child sits low down in the seat and often cannot look out. His eyes may be fixed on some object inside the car, and reading a book makes sickness much more likely. Train-sickness and sea-sickness may be overcome by continuous usage, but this does not always seem to hold good for motor-car sickness in children. Gradual accustoming to motoring and general raising of the health are the real remedies, and later on the distraction of driving.

Factors Common to All

The exudative diathesis is thus of great interest clinically, and especially to those who study children. Too much excitement, too much exercise, and too much unsuitable food may culminate in attacks of asthma, acidosis, eczema, urticaria, and other metabolic upsets, especially if allergic shock is present. These upsets may be to some extent outlets for an overloaded metabolism and in part safety valves. Their advent usually incapacitates the patient and leads to a cessation of the metabolic overstrain. Excess of exercise, emotion, or eating should therefore be avoided by all exudatives. The idea is to order metabolism so that it is not continuously overloaded by waste products from physical exertion or mental stress or unsuitable diet. Relief of strain and stress is one reason why a stay in a hospital or

nursing-home is so successful. The nervous element is very potent in causing exudative signs in children.

Diet is important. Exudatives do not tolerate rich fats, especially milk fats. Many of them cannot take cream, nor can they digest cod-liver oil and other rich tonics. An excess of vitamin preparations, the citrus fruits or even calcium may cause biliousness, furred tongue, and disordered digestion. Glucose or sugar-sweets are allowable but not toffee. Exudatives are of the hypochlorhydric tendency and they need a carbohydrate snack, especially if going for a long time without food. They may be benefited by hydrochloric acid or perhaps vinegar. Bray [10] recommends a pepsin and hydrochloric acid mixture before meals. It will be noticed that many of them have a special liking for vinegar, pickles, &c. If so, I allow the child to have such preparations used with discretion. Freshness of food is important. This applies equally to meat, milk, and vegetables. Wherever possible the food should be eaten as near to the time when it has been obtained from its living state as possible. This element of freshness is often neglected.

Fresh salad vegetables are a good source of vitamins and suit exudatives better than the citrus fruits. The ideas embodied in the Gerson diet are essentially freshness of food-supply, plenty of salads and uncooked vegetables, and absence of salt. Meat is very much cut down, but this does not suit exudatives who need calories and can best utilise carbohydrates and proteins. The latter are especially necessary for children who have to body-build. Meat, fish, chicken, rabbit, are therefore all allowable. Oatmeal and oaty foods do not suit exudatives very well and may have to be limited. Rowe's elimination diets [12] can be used to cut out allergy-producing foods. Elimination is sluggish and a mild rhubarb and soda mixture which does not gripe or purge is a valuable preventive but must be given for a long time. Magnesia or grey powder may be substituted. Urine and skin elimination should be stimulated. A furred tongue is a sign of failure and must be prevented if possible, but not by over-use of aperients.

Climate is important, bracing seaside places are not good, they make the child "liverish," so do east winds. Altitude per se tends to relieve asthma and not only because of the absence of allergens, but cold bleak places do not suit exudatives. Dryness does also so long as it is not east wind dryness. A mild dry and high climate in a hill locality is the best for most cases though there are exceptions, and it is unwise to prophesy the effect of any climate.

Ultra-violet rays may help in raising the general health, but not uncommonly they do not suit any more than a bracing seaside place does. Vaccines may be useful in asthma if sputum is present and measures to counteract infections should be taken in all exudative illnesses. Removal of septic tonsils, suitable treatment of catarrhs, respiratory duodenal or nasal are important. Tuberculin may be used in chronic cases of asthma with bronchial glands or of acidosis with mesenteric glands. I generally use Koch's new tuberculin (T.R.). After a long usage I can say that, given with care and in small weekly doses, it may raise the child's general health considerably. Peptone and Oriel's proteose treatments are suitable in some cases of asthma. Thyroid gland extract may improve some cases of eczema. It should help asthma as it stimulates the sympathetic. The following combination is useful for children. Tabl. thyroidei grs. 2, pituitary gr. ½, suprarenal gr. ¼, as prepared for me by Burroughs Wellcome and Co.

Exudative children have great sensibility, great capacity for enjoyment of all that is artistic and emotional, for concentrated overwork, and for all the æsthetic interests of life. They have their "crowded hour," their intellectual and artistic thrills, their brilliant games, their feast of delicacies known not to suit them but their metabolism breaks down under unusual strain, and they pay for excess by crowded hours of another sort—a spell of distress such as is occasioned by, for example, asthma, acidosis, migraine, urticaria, or simplest of all, a "bilious attack."

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MIXED MEDICINE [1]

NOWADAYS we are bombarded with books on how to preserve our health. Any really conscientious person who was addicted to their study might spend his days unprofitably deciding what to eat, what to drink, and wherewith he should be clothed. The writer who can treat this well-worn theme in such a way as to make it seem as fresh as a new-laid egg has reason to congratulate himself. This is what Dr. Fox has achieved, and, as Lord Dawson remarks in the foreword, his readers will feel themselves debtors. The book is composed of short essays on such widely different subjects as care of the nose, teeth in childhood, chairs and seats, exercise, the nervous child, clean milk, varicose veins, gas poisoning, hiccups, offensive breath, short sight. Dr. Fox makes an old tale sound new, partly at least by a whimsical approach. For example:—

"To most of us the nose is even more useful than ornamental." "Some day your children must go out into the world to seek their fortune. And perhaps the best equipment you can give them for their travels is a set of really good teeth." "Man was certainly not designed to sit on chairs, and it seems to me that very few chairs are designed for man to sit on." "The present craze for exercise does far more good than harm." "Fear is infectious, like measles, and the chief reason why nervous parents have nervous children is that they have infected them continuously since birth." "Short-sighted people have eyes which are a little too long fore and aft."

In this pleasant way the reader is lured on to learn and remember some new facts about his health, in the comfortable assurance that the facts are accurate.

All the same, healthy living is a tricky business. It is impossible to please everybody. "Sweets!" cries the dentist. "I wish they could be abolished by law! They are the ruin of children's teeth." "The sugar-starved child," remarks the physician sententiously, "needs sweets to make good the deficiency of sugar in his diet." "Well, if you must give him sweets," the dentist concedes with an ill grace, "for goodness sake let them be boiled sweets, so that they won't cling in sticky masses round his teeth." By this time the bewildered father may well turn with confidence to Dr. Fox's book to find out what he has to say about it, and there it appears that Dr. Fox is all for sweets if used with discretion. The satisfied father smiles, and idly glancing through what has now become his pillow-book finds, under the heading of First-aid at Dinner, the remark: "Round slippery sweets are very dangerous to children"—the boiled sweet condemned, in short. Does Dr. Fox perhaps err on the careful side? We have all swallowed boiled sweets unexpectedly in our time, and shared the presumptive sensations of an ostrich who has gulped down a cricket ball. Very few of us have inhaled a boiled sweet into our lungs, and most of us would have been prepared to take a chance. If there is a fault in Dr. Fox's advice it is

[1] "Healthy Living; or Good Advice for your Friends." By T. F. Fox, M.A., B.Chir., M.R.C.S. With a foreword by Lord Dawson of Penn. London: Martin Hopkinson. 1933. Pp. 125. 1s. 6d.

this tendency to caution; of the two schools of doctors it looks as though he is a wind-upper rather than a pooh-pooher. In these days of accident insurance and efficient policing, surely we need to be encouraged to live dangerously. Must we really rest on the first few days of our holidays, protect our eyes from the English sun, eat very little when we are tired, and generally go on in a way which would make our ancestor, the hardy Norseman, blush for us? We have taken to thinking of health as an end in itself, and one is reminded of the man who found that it took him all his time to keep fit. Can Dr. Fox be one of these? Must we imagine him coming home at the end of a day's work, refusing a cigarette to mitigate his weariness, sternly disposing himself on the drawing-room couch and turning a deaf ear to his wife who, though she may not have cooked it very well, is anxious that he should eat his dinner while it is hot. Her gentle pleading is of no avail; the doctor prefers bread and milk. But we are unwilling to take such a harsh view of any fellow creature, and it is pleasanter to think of Dr. Fox writing one or two of these essays with his tongue—or even a boiled fruit drop—in his cheek. After all, it is no bad thing for a book on health to emphasise the need for caution; Dr. Fox probably knows that it is the nature of mankind to forget or ignore good advice unless there is a threat attached to it. He has given the facts about all manner of things which influence health, from drains to artificial respiration, and has made them entertaining. His grateful readers will probably concede him willing permission to point any moral he chooses.

NEW PREPARATIONS

CARBOSERIN (Bayer Products, Ltd., 19, St. Dunstan's Hill, London, E.C.).—This is a vegetable charcoal prepared by a process which is held to ensure a high state of activity. As is known, the adsorbent properties of charcoal depend largely on the method of preparation, and by the methylene-blue test carboserin appears 40 times greater in its adsorbent power than ordinary charcoal. It is put up in tablet form in tins of 50 tablets, and should be a convenient remedy in the flatulence of indigestion.

ADEXOLIN EMULSION (Glaxo Laboratories, 56, Osnaburg-street, London, N.W.).—With a content of vitamins A and D, standardised to be equivalent to its own volume of high-grade cod-liver oil, this preparation has also 7½ grains of calcium lactate in each fluid ounce. Actually each fluid ounce contains 56,000 units of vitamin A and 2800 international units of vitamin D. The emulsion is recommended in convalescent conditions or those of general weakness, and as it has a pleasant flavour those who dislike or cannot tolerate cod-liver oil can take it. It is put up in 4 oz. and 8 oz. bottles, and the dose is for infants half a teaspoonful two or three times a day, for children one to two teaspoonfuls at the same intervals, while adults take one tablespoonful at similar periods of time.

FILIVEX POWDER AND FILIVEX LIQUID (Glaxo Laboratories, 56, Osnaburg-street, London, N.W.).—These are preparations of fish liver designed for the treatment of pernicious anæmia, and made in accordance with the technique of Prof. L. S. P. Davidson (v. *British Medical Journal*, August 20th, 1932). Great hæmopoietic power can be claimed for them as the results of clinical tests. The treatment of anæmias was discussed at a joint meeting of the sections of therapeutics and medicine of the Royal Society of Medicine in January of this year, when Prof. Davidson, referring to his published work, said that fish livers contained a potent substance for the cure of pernicious anæmia, and that dramatic results had been obtained with extracts prepared from the livers of various fish, which could be prepared at a much lower cost than mammalian extracts. Both the filivex extracts are intended for oral administration, and can be mixed with a convenient amount of hot water, flavouring and condiments being added to the patient's taste. The liquid is packed in 8 oz. bottles, and the powder in boxes of three 5-gramme tubes. The usual daily dose in the remission stage is 5 grammes of powder or 2 oz. of liquid, but in the relapse stage, where more intensive treatment is called for, the daily dose of filivex extract (powder) may be 10 grammes or more. Each 5 grammes of the powder is the therapeutic equivalent of the extract from 8 oz. of fresh mammalian liver.

THE USE OF THE HANDS

A DISCUSSION reported in our issue of April 22nd (p. 864) brought up the question of the use of the hands in medicine. The retention of primitive pentadactyl hands was an essential factor in man's evolution, inasmuch as it opened the way to a supreme degree of refined prehensibility; for, without adequate prehensibility to give effect to the dictates of the brain, super-average mental capacity would obviously possess no survival value. It would in no wise help an oyster to be endowed with the genius of an Einstein. In the mole the hands have become modified for burrowing, in the bat for flying, and in the seal for swimming, while in the carnivora the digits have acquired retractile claws for seizing the prey, and in the ungulates they have become hooved and adapted for progression on firm land. All such cases of limb specialisation involved the loss of potential prehensibility, and thus put a limit to mental evolution. In man, however, the tactile-kinæsthetic sense of the hand still does more even than vision to bring us into more intimate relation with the material world; by manipulating a solid object we test its configuration, weight, consistence, smoothness or roughness, its warmth or coldness—all of which experiences would be lacking in the absence of the tactile-kinæsthetic sense. Were life possible without this sense we would, bereft of it, seem to be living in a world of phantoms—of impalpable visions, scents, and sounds.

The hand, including the nervous structures associated with it, is the most teachable of organs. Consider the manipulative skill of the typist, the musician, or the surgeon, and the trained finger of the physician capable of estimating the systolic radial blood pressure to within a few millimetres of mercury. Naturally the tactus eruditus plays an essential part in manipulative treatment. Some maintain that the touch of the operator's hands has its psychic effect on the patient; that, if the operator has no "feel" in his hands, he may excite antagonism on the part of the patient. This one can well believe, but there are no grounds for supposing that the hands of the operator exercise a mysterious psychic influence.

In diagnosis both touch and vision are brought into requisition, and who shall say which is the more important. In the surgical out-patient department the student is all too apt to rely upon his hands rather than his eyes in making a diagnosis. That brilliant surgeon, Charles Barrett Lockwood, was wont to say: "use your eyes and mistrust your fingers," and would sometimes talk for 20 minutes on a case, and elicit all the needful facts without recourse to his hands. The hands are apt to deceive in testing for fluctuation; but they can generally be relied on for feeling the expansile pulsation of an aneurysm, and the physician can sometimes make a rapid diagnosis by means of palpation alone—for instance, by feeling the characteristic presystolic thrill of mitral obstruction and the water-hammer pulse of aortic regurgitation.

Messrs. EDWARD TAYLOR, Ltd., manufacturers (since 1847) of surgical and medical plasters, have opened a larger and more modern factory called the "Noble" Factory, Monton, Eccles, Lancashire. This firm claim to have made the first rubber adhesive plaster in this country, forerunner of the elastic plaster bandage for varicose ulcers known as Flexo-plast.